PASSENGER EXPERIENCE AT AIRPORTS: AN ACTIVITY-CENTRED APPROACH

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Abstract

In today's economic climate, airports are a vital source of income for a country and city's economy. As passengers are vital customers of airports, by making the passenger the focus of the research provides a novel approach to understanding and improving the airport experience. This passenger focus is currently missing from existing research, concentrating on specific areas of the airport, and originates from a management perspective. This thesis addresses this gap in knowledge by focusing on the passenger experience in International airports.

The research reported in this thesis involves two field studies at three Australian airports. Four hundred and seventy-six passengers were observed. Data collection methods included video-recorded observation and retrospective interviews. Observation allowed the development of the list of activities that passengers undertake and the retrospective interviews explored the context in which these activities were undertaken. This provides a new perspective of the airport experience: one that is passenger focused.

This research provides a significant contribution to the understanding of a passenger's experience at an airport. New knowledge is provided through identifying the activities and interactions passengers undertake throughout their experience. The outcomes of this research demonstrate how rich knowledge of passenger activities, locations and contexts provides a new perspective of the airport experience.

The Taxonomy of Passenger Activities (TOPA) developed from this study is a significant outcome of this research. TOPA shows that previous research has ignored many aspects of the passenger experience. A new perspective for understanding the passenger experience is provided, showing what is important to the passenger, and how this differs from the management perspective. The significance of TOPA lies in its potential application to airport terminal design where it can be utilised to understand and improve the passenger experience.

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Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature:  _____

Date: 11/06/2013_____

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Chapter 1. Introduction

This thesis investigates passenger activity during the passengers' airport experience, using an activity-centred approach. This first chapter introduces the thesis background, and provides an overview of what is contained within each chapter. It identifies the importance of understanding airports, and establishes the gaps in the current knowledge in the area (Section 1.1). It then presents the research question and sub-questions that were developed as a result of these gaps (Section 1.2). The methodology used to answer the questions is briefly described in Section 1.4. The aims of this research are discussed in Section 1.3, followed by the contributions to knowledge provided by the work (Section 1.5). Finally, Section 1.6 provides the structural framework for the remaining chapters of the thesis.

1.1 BACKGROUND

Airports are one of the most complex systems in modern society (Kazda & Caves, 2007a; De Neufville, 2008). They are also vital sources of income to developed and developing countries (Tourism Forecasting Committee, 2011). In the current financial decline in world economies, it is important to maintain, or improve the income from the airport industry (London First, 2008). More efficient, passenger-friendly airports are critical to achieving this outcome.

There is a considerable body of knowledge of particular aspects of passengers' airport experiences (Graham, 2003; Kazda & Caves, 2007b, 2007a; Minton, 2008; Underhill, 2008; Castillo-Manzano, 2009; International Air Transport Association, 2010). This previous research focuses on only one aspect of the experience; that is; how long it takes to process passengers at the four domains in International Departures: check-in, security, customs and boarding. What has had limited investigation is what passengers do during the periods that they are not being processed, this is referred to as 'non-processing time' or 'discretionary periods'. The combination of these processing and discretionary periods forms the complete passenger experience.

Four main approaches have been used to understand the passenger experience: (i) benchmarking, (ii) questionnaires, (iii) modelling, and (iv) direct observation.

Benchmarking has been used to compare the facilities available to passengers, or the times spent at the four processing domains (Airport Council International, 2008); however, it does not identify how the passenger experience can be improved (Francis, Humphreys & Fry, 2002). Questionnaires are used to determine passenger needs (Consumer Protection Group, 2009); however, these are considered to originate from a management perspective of what is important to passengers, and may therefore fail to address what is actually important to them (Yeh & Kuo, 2003). Modelling has been used to simulate how domains will cope with busy periods (Kiran, Cetinkaya & Og, 2000; Van den Briel, Villalobos, Hogg, Lindemann & Mulé, 2005); however, it is unclear as to whether models adequately consider real world circumstance. Direct observation concentrates on the time taken at each domain (Consumer Protection Group, 2009); however, it has yet not been used to consider the complete experience that passengers have (Kazda & Caves, 2000a).

Management considers these four approaches to be important in understanding if the airport is running efficiently by timing how long processing takes; the results of these investigations are then extrapolated to a determination of whether the airport is providing a good experience for passengers. While these approaches are efficient methods of looking at how long it takes to process passengers at each domain, they currently do not look at the actual passenger experience to understand if it is a good or a bad one.

Previous research has also only investigated the processing periods. Little research has investigated what passengers do when they are not being processed; this is despite the fact that non-processing time accounts for as much as two thirds of the entire passenger experience (Underhill, 2008). Therefore, a large part of the passenger experience remains unexplored.

Indeed, much of the research that looks at the passenger experience concludes that only when the whole experience is understood, and only when this understanding comes from focusing on passengers will innovative solutions be developed to improve the experience (Kazda & Caves, 2000a; Transportation Research Board of the National Academies, 2008).

To address the need for a passenger-centred focus, an activity-centred approach has been previously used by the author and colleagues (Popovic, Kraal & Kirk, 2009; Popovic, Kraal & Kirk, 2010; Kirk, Popovic, Kraal & Livingstone, 2012;

Livingstone, Popovic, Kraal & Kirk, 2012). The approach has been demonstrated as a robust way to explore the airport experience with a passenger focus, and has already led to the development of innovative ways to support and improve the passenger experience. This project aimed to take this approach further and observe the whole passenger experience, from entrance to the airport until boarding a flight. Retrospective interviews follow the observations to fully understand why the interviewees undertook certain activities at the airport.

1.2 RESEARCH QUESTIONS

The literature review identified areas of the passenger airport experience that have had limited research. There is a lack of knowledge of the whole airport experience, and minimal focused on the passenger. The focus of this research was to identify what passengers do during their time at the airport, and to understand the context in which their activities occurred. Therefore, the primary research question was:

- What do passengers do during an airport experience?

In an effort to further understand the airport experience two sub-questions focused on passengers' use of discretionary periods (the least researched area of the experience) and the interactions passengers had at the airport. Thus, the two sub-questions were:

- What do passengers do between processing activities?
- What (or whom) do passengers interact with during their airport experience?

The research questions addressed the gap in the current knowledge of the passenger experience by investigating their complete experience. They also focused on what is important to the passenger, which many authors have identified as being lacking in available research (Caves & Pickard, 2001; Yeh & Kuo, 2003; Fodness & Murray, 2007; Kirk et al., 2012).

1.3 RESEARCH AIMS

The aims of this research were three-fold. Firstly, to understand the full experience passengers had as they passed through the airport. This included a deeper

understanding of the activities passengers carried-out, what locations they visited; and the context in which the activities were undertaken. Secondly, to provide new knowledge of how passengers spent their non-processing time (referred to as 'discretionary time'). Thirdly, to list what, and with whom, passengers interacted at airports. Thus, the research aimed to understand the full range of activities passengers engaged in while at international airports. By compiling and categorising these activities, a novel perspective of the passenger experience was developed.

1.4 METHODOLOGY

The methodology used to investigate the research questions was observation and retrospective interviews, a combination referred to as 'augmented observation' (Harrison, 2012). Two field studies were conducted to answer the questions arising from the research gap. The observation stage involved videorecording passengers throughout their International Departure terminal experience at three Australian Airports. The focus of the research was limited to International Departures for two reasons: (i) international travel has the greatest amount of discretionary time available to passengers, and (ii) videorecording is permitted at more locations in the Departures compared to Arrivals terminal building. Choosing a context with maximum discretionary time was important for answering the main research question and first sub-question (the concept of discretionary time will be explained in Chapter 2). Retrospective interviews took place after the observations, and were important in providing information for a deeper understanding of the context of the activities.

1.5 CONTRIBUTION TO KNOWLEDGE

The research provides a significant contribution to the understanding of a passenger's experience at an airport. By looking at the whole experience, new knowledge is provided through: an understanding of how passengers spend their discretionary time (thus, answering the first sub-question); identification of the interactions passengers have throughout the experience (answering the second sub-question); and through the determination of how activities and contexts can provide a greater passenger focus of their airport experience (answering the main research question). In addition, by focusing on the passenger this research has generated more information that surpasses answering the question. The activity-centred approach has

provided a novel understanding of the passenger experience that has contributed novel outcomes.

Three outcomes have been produced by the passenger focus: (i) a list of passenger activities, (ii) the Taxonomy of Passenger Activities (TOPA), and (iii) a Matrix of Passenger Activity (MOPA). All three outcomes provide a new perspective of the passengers' experience. The list of passenger activities shows that there is a range of activities passengers carry out to get through the various stages of the process. The activities and their contexts led to the development of the TOPA. Two of the TOPA groups have been the focus of most of the passenger experience research to date, (processing and queuing). An additional two TOPA groups (consumptive and moving) have had limited research in relation to the passenger experience. New knowledge is provided by showing that all groups that make up TOPA are important to consider in understanding the passenger experience. It also demonstrates there are significant gaps in the knowledge of the passenger experience when it is explored by the previous measurements of benchmarking, questionnaires, surveys and modelling.

The MOPA develops out of the interaction between the TOPA groups. The MOPA provides a tool that can be used to understand how future innovations will affect the passenger experience. It shows what activity groups must be considered when attempting to alter areas of the experience. For example, the MOPA can be used to understand how the passenger experience will be affected when self-service technology is added to particular domains.

The contributions to knowledge discussed above could only have developed as a result of the methodological approach used in the project. Observation of the passengers, augmented through retrospective interviews, demonstrates itself to be a robust technique that leads to a full understanding of the airport experience that is passenger focused. This activity-centred approach contributes significantly to the understanding of a customer perspective. It can be used in many other industries to develop a more holistic understanding of the customer experience.

1.6 THESIS STRUCTURE

Chapters 2, 3, and 4 review the literature relevant to the research questions posed in Section 1.2. Chapter 2 explains what is meant by 'the passenger

experience', and what stages a passenger must go through to complete the experience. Chapter 3 reviews the literature on current measures used to understand passenger experience, and concludes by determining why these measures are lacking. Chapter 4 reviews current methods that focus on the user as the important factor in an experience, relating this to the airport situation. It justifies the activity-centred approach as an appropriate way to investigate the experience of passengers, and how it provides a novel understanding of the airport experience.

Chapter 5 addresses the research methodology. It outlines the methodology that is used in the two field studies, which allows an in-depth understanding of the passenger experience. The methodological implications of passenger observation are discussed, as are the tools used to analyse the data obtained from the studies.

Chapter 6 covers the method and results from Field Study One. This study investigates what passengers do during their airport experience, what they do during their non-processing time and with what and whom they interact. Chapter 7 discusses the results of Field Study One and shows how they help to answer the research questions.

Chapter 8 covers Field Study Two. It explains how the data was collected and analysed. This field study investigates what passengers do at each processing domain, and with what and whom they interact. It also investigates the passenger experience from the perspective of the members of staff. The taxonomy developed in Chapter 7 is applied to give further insight into the passenger focus taken.

Chapter 9 integrates the findings from the two field studies, and discusses these in relation to the relevant literature. It also considers how the activity taxonomy illustrates a gap in the previous understanding of the experience passengers have at airports and how it leads to a new perspective of the passenger experience.

Chapter 10 considers how this research has provided a new perspective in understanding the passenger experience. This includes what new knowledge has been developed from the research, and its implications for improving the passenger experience. The chapter concludes with the research limitations, and possible future research directions. Figure 1.1 illustrates the structural framework of the thesis.

Thesis structure			
	Literature review	**Field studies**	
	Chapter 2 Passenger experience	Chapter 5 Research design	
Chapter 1 Introduction	Chapter 3 Current measures of passenger experience	Chapter 6 and 7 Field Study One	Chapter 9 A new perspective on passenger experience
	Chapter 4 Towards a passenger focused airport experience	Chapter 8 Field Study Two	Chapter 10 Conclusion

Figure 1.1: Structural framework of the thesis

1.7 SUMMARY

Chapter 1 has introduced the research problem and identified the gap in understanding passenger experience at airports. This gap led to the development of the research question and sub-questions. How the chosen methodology answered the research questions was briefly discussed. By answering the research questions new knowledge of the passenger experience developed. This knowledge provides a new perspective for understanding the passenger experience. The new perspective will impact the future design of terminals that focus on passengers' needs, wants and activities.

The next chapter further explores and develops the concept of 'the passenger experience' and why it is important to understand this experience.

Chapter 2. Passenger experience

2.1 INTRODUCTION

This chapter reviews the current literature on passenger experience that focuses on measuring the passenger experience. It discusses why the airport passenger experience is important to understand, and explores what is meant by 'the airport experience'. The project focuses on passengers departing from an international airport, and what happens at each of the four domains - check-in, security, customs, and boarding - are considered. While the exploration of these four domains has been the main focus of previous research, this project also investigates periods when passengers are not being processed at one of these domains – that is, their discretionary periods. Passenger activity during these periods has been the subject of limited research in the literature.

2.2 THE IMPORTANCE OF AIRPORTS

Airports are an invaluable source of income for developed and developing countries. This income comes from the tourism, business and freight sectors. Fast and efficient air transportation of tourists, business personnel and freight is a necessity, and will become even more dominant this century (Charles, Barnes, Ryan & Clayton, 2007). This is particularly true for Australia as it is such a large country and requires a fast and efficient transportation system. The value of tourism to Australia alone rose from $89 billion in 2009 (Tourism Forecasting Committee, 2009b) to $97 billion in 2011, with $72 billion sourced from domestic tourism and $25 billion from international tourism (Tourism Forecasting Committee, 2011). Although there has been an increase in aviation profits in Australia, globally profits have seen a significant decrease due to many factors, including: the Global Financial Crisis which began in 2008/09; the subsequent collapse in wealth, causing businesses and individuals to curtail travel; natural disasters in Australia, Japan and New Zealand; and the continuing rise in the price of fuel (Tourism Forecasting Committee, 2011), which caused fuel to increase from 10% to 30% of operating costs (Fattah, Lock, Buller & Kirby, 2009). Despite these challenges, Australia

continues to perform above the international average, and has seen a gain in its market share of international tourism (Tourism Forecasting Committee, 2009a).

It is important during this period of growth in tourism that passengers are satisfied with their experience at airports. There has been a significant shift in where airports receive the largest part of their income; from airline sources such as leases and landing fees, to passenger-related sources, such as tickets and sales (Causon, 2011; Peterson, 2011). As a result passengers are now considered to be more important customers of airports than airlines, resulting in airports becoming increasingly passenger focused. Passengers can therefore be considered as an important customer of the airport. A great deal of research has investigated customer satisfaction in general, and satisfaction has been linked to a company's profitability (McQuitty, Finn & Wiley, 2000). Therefore, for airports to increase profitability they need to investigate passenger satisfaction. By understanding and ensuring this satisfaction, the Australian aviation industry will ensure passengers continue to return to airports. A lack of understanding of passenger satisfaction and the subsequent lack of implementation of measures to ensure it have been shown to reduce the chance of passenger return visits. The consequential loss of tourist, business and freight revenue constitutes a threat to both a city and country's economic growth and sustainability (London First, 2008).

While an understanding of satisfaction is important to all kinds of businesses there has been a lack of agreement on how it is measured (Jones & Suh, 2000). Yi (1989) and Harrison (2012) argue that satisfaction is the difference between the customers' actual experience and what they expected to happen; an alternative view suggests that expectations do not always have to be met for customers to be satisfied with their experience (Spreng, MacKenzie & Olshavsky, 1996). Although the two approaches differ in their assessment of the importance of customer expectations, both underline the importance of customer experience. How the customer experience is investigated and understood is now considered.

2.3 UNDERSTANDING THE CUSTOMER EXPERIENCE

Customers have an experience whenever they purchase a product or use a particular service (Berry, Carbone & Haeckel, 2002). Shaw (2007) states that the reasons companies strive to ensure good customer experiences are to:

- Win and maintain customer loyalty in a competitive environment
- Provide a differentiator to set them apart from their competitors
- Increase profits and provide greater shareholder value

This rationale is consistent with the direction airports are being encouraged to take (as explained above); namely to increase profits by winning passenger loyalty. As stated earlier, this is important for airports to understand their customers' experience to ensure that passenger loyalty is retained and that profits can be improved.

In general, a customer's experience is made up of all 'clues' available to them. The clues that make up an experience are anything that can be perceived, sensed, or noticed (due to either its presence or absence), and that carry a message to the customer. Clues include the physical setting, an employee's attitude and knowledge, the quality of the product or service, its price, and the speed of service. Each clue contributes to providing the total experience (Berry et al., 2002). Traditionally, the only clues used to manage customer experience were price and quality; however, these are no longer considered sustainable as a competitive advantage (Battarbee & Koskinen, 2008). It is now argued that the focus of companies should be on understanding the complete customer experience, through monitoring and modelling that experience (Goetsch & Davis, 2004).

Hekkert and Schifferstein (2008) state that to thoroughly understand people's experience, the constituent building blocks of their interactions must be explored. Berry, Carbone and Haeckel (2002) stress that management of the experience comes from understanding the complete customer journey – from the initial expectations of the experience, through the course of the experience, and to an assessment of the experience when it is over. These different levels of investigating the customer experience can be combined and both the macro- and the micro-experiences can be considered to constitute a holistic understanding (Gentile, Spiller & Noci, 2007).

This level of investigation into passengers' experiences, as important customers of airports, has been suggested in the airport literature (Graham, 2003; Minton, 2008; Underhill, 2008; Castillo-Manzano, 2009; International Air Transport Association, 2010). For example, the UK's Department of Transport (2007) argues that understanding the passenger experience is critical to maintaining and improving

the competitiveness of both an airport, and of a country itself. The USA's Transportation Research Board of the National Academies (2008) further argues that innovative solutions to improve the passenger experience are more crucial than ever. To be able to design innovative solutions and improve the competitiveness of airports, the airport experience itself must be first understood. To date this has not been carried out.

2.4 THE AIRPORT EXPERIENCE

An airport is one of the most complex systems in modern society. This complexity arises from the various components which make up the airport, all of which have different requirements. These components are the various systems, procedures, stakeholders and artefacts necessary for its operation. Stakeholders are the parties interested in the operation of the airport, such as: private companies (the airport owners, shareholders, the airlines, security); government bodies (Customs, Australian Quarantine and Inspection Service (AQIS), and the Australian Federal Police (AFP)); customers (passengers and visitors); industry trade groups (International Air Transport Association [IATA]); and regulatory agencies (Department of Infrastructure, Transport, Regional Development and Local Government). All of these stakeholders have different requirements and objectives that must interact (Graham, 2003; Adey, 2008); thus the behaviour of any one of these depends on the behaviour of the others.

From the passenger's viewpoint, however, many of the above systems, procedures, stakeholders and artefacts are not visible. There are several factors that need to be considered to understand the complete passenger experience; for example: where the experience begins (this can be when the passenger is preparing for their trip); the journey to and from the airport; and progressing through the airport and its various processing stages. While the experience of the passenger can be affected even before they arrive at the airport the preparation for the trip and the journey to and from the airport are beyond the scope of this project. This research will focus on the passenger experience at the airport terminal.

Two terms need to be defined before considering the passenger experience further. Firstly, the term "passenger" refers to a customer of the airport, who has bought a ticket to fly and is present in the airport terminal for this purpose. In an

international terminal this is to fly to a different country. Other customers are present, such as people who accompany the passenger to the airport to farewell the passenger. These customers are commonly referred to as “wavers” (Livingstone et al., 2012). This research will focus on observing the experience of passengers.

The second term that needs to be defined is experience. The term experience is taken from Dewey’s (1934) description. Experiences are considered situations and episodes during an interaction of a live creature and the environing conditions in the process of living. In this research the airport experience is the interaction between a passenger and how they get through the airport process. This includes the tasks required to get permission to board their flight and how they decide to fill in any spare time they have in the airport.

The components of the passenger experience at the airport terminal – the various domains the passenger must pass through to board their flight – can be seen in Figure 2.1. These components differ according to whether the passenger is leaving the country – Departures – or returning to the country – Arrivals (Figure 2.1).

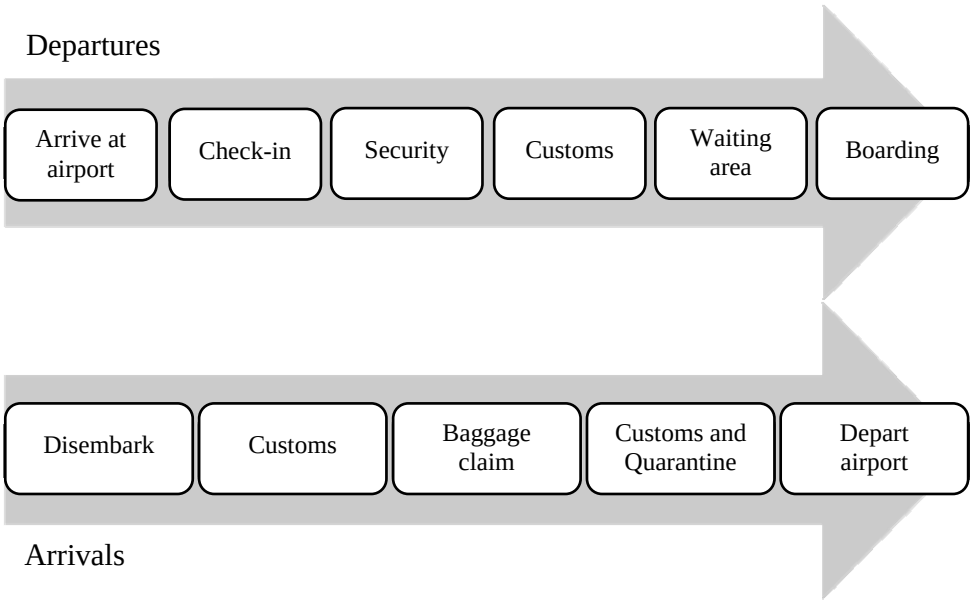

Figure 2.1: The various domains of the airport experience for arrivals and departures (Popovic et al., 2010)

Figure 2.1 is taken from research into passenger experience (Popovic et al., 2010). However, IATA provides a different view of the passenger experience, and Figure 2.2 shows the current processing steps it uses to improve passenger flow and experience. While the Popovic et al. (2010) representation of processing considers

ten steps to progressing through the airport processing for both Departures and Arrivals, IATA considers there to be fifteen stages in their figure. These stages differ in their allocation to Departures and Arrivals, and in their concentration on particular aspects of a particular state. For example, Figure 2.1 has 5 steps for Departures, and 5 at Arrivals; Figure 2.2 has 11 stages at Departures, 3 at Arrivals and includes the actual flight stage (International Air Transport Association, 2010).

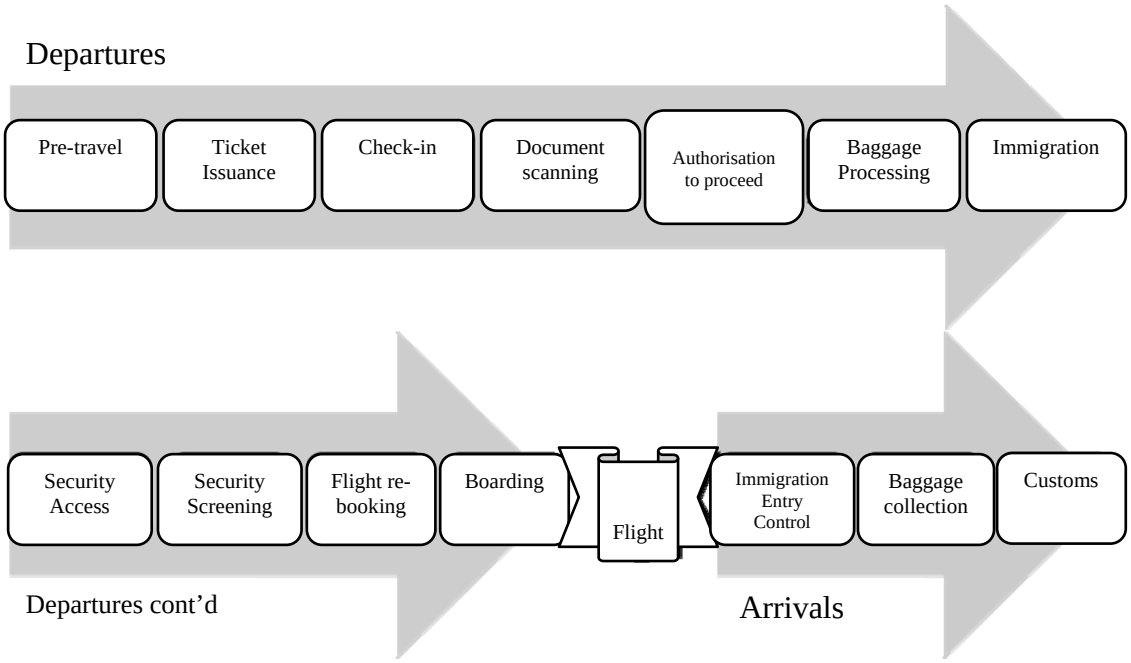

Figure 2.2: IATA's process steps in the passenger experience (International Air Transport Association, 2010)

The focus of the two representations also differs: the IATA representation concentrates on areas where self-service technology can be used to increase passenger processing, while the Popovic et al. representation concentrates on overall processing. Consequently, the domains discussed in Figure 2.1 have been divided into two or three stages in Figure 2.2. For example, four of IATA's steps occur at check-in (check-in to baggage processing) and this is shown as one stage (check-in) in Figure 2.1. The second step in Figure 2.2 (ticket issuance) can also occur at check-in or at home via the internet, and could occur at before the first stage in Figure 2.1, or at the second stage (check-in). Further complexity can be added if mobile technology is considered, where passengers could check-in via their mobile phones on the way to the airport. Security is also divided into two steps in IATA's model, (security access and security screening) as different technology is proposed for these

two stages. Popovic's representation considers security as one stage. Both propose to assist in understanding and improving the passenger experience. IATA concentrates on where self-service technology can be introduced to support the passenger experience. Popovic et al. (2010) concentrates on the locations that the passenger must interact at to get through the airport process, taking a passenger focus. This has been lacking in previous research and so will be used in this project.

Individual airports can also add to the complexity and understanding of the experience. The sequence of steps in passenger processing can be different at different airports; for example, the positioning of security and immigration can be interchanged, depending on the country and the airport (Kazda & Caves, 2007a), so rather than security being before immigration as in Figure 2.1, immigration can be before security. However, the exact sequencing of stages is not a vital factor in understanding the passenger experience. Factors that do need to be considered are whether the passengers are landside or airside, and whether the passengers are being processed or not. Passengers are considered to be on the 'landside' when they have not passed through the security/customs area of Departures, or have passed through the customs/quarantine area of Arrivals. 'Airside' is the sterile area after security/customs in Departures, or the area before the passenger has left the customs/quarantine area of Arrivals (Figure 2.3). The sterile area refers to locations within an airport that have restricted access. Only those people who have received a boarding pass and have been screened and cleared by both security and customs can legally enter this restricted area (Brisbane Airport Corporation, 2010).

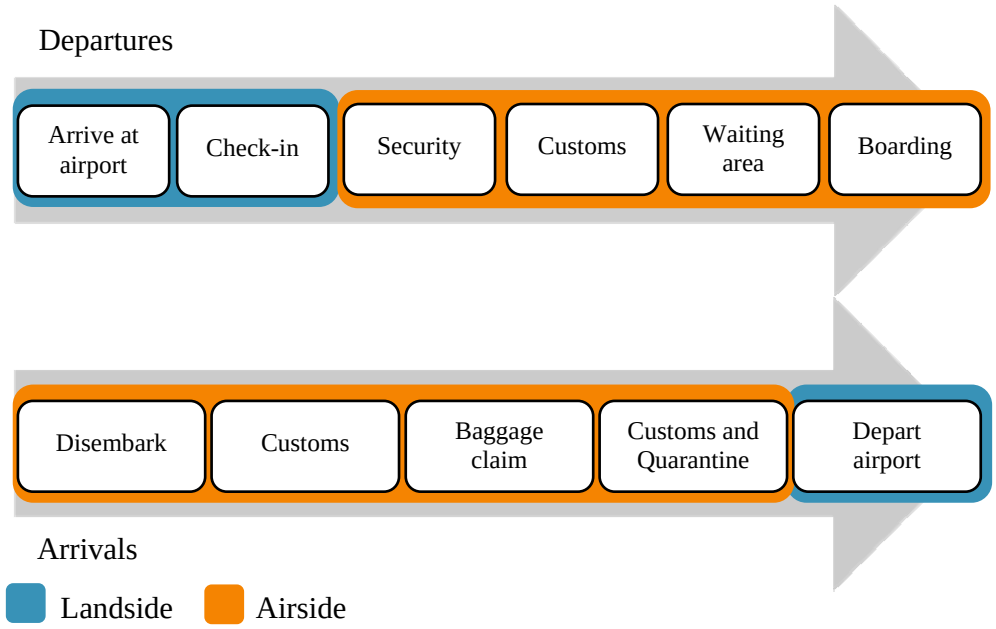

Figure 2.3: Landside and Airside division of the airport experience

Passengers are processed when they are undertaking a step that is at a domain controlled by an airport stakeholder, such as check-in or security. When passengers are not being processed, they are in what is termed ‘discretionary periods’ (Figure 2.4). Passengers can use discretionary time as they see fit, which may include visiting the retail outlets available at the airport, or engaging in other activities. The combination of discretionary periods and processing periods constitutes the total time the passenger spends at the airport, and is referred to as ‘dwell-time’ (Figure 2.4).

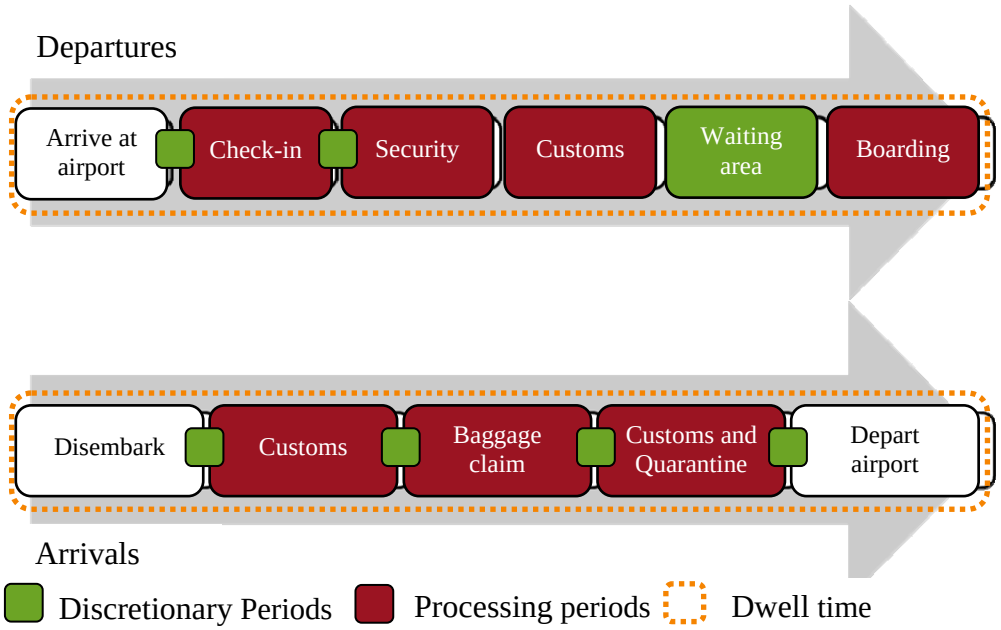

Figure 2.4: Discretionary and processing periods in the airport experience

As can be seen from Figures 2.1 to 2.4 there are many factors and considerations involved – knowingly or unknowingly – in the passenger's airport experience. It is evident, therefore, why this experience – from arrival at the airport entrance, through the various processing stages, to the aircraft departure gate – is considered one of the most stressful parts of a trip (Transportation Research Board of the National Academies, 2008). The next sections consider the various domains the passengers must encounter and what happens at each domain. The details considered in these sections will consider the experience specifically at Australian airports, unless otherwise stated.

2.4.1 Check-in

Check-in is the responsibility of the airlines and the ground handlers, and the only domain where processing occurs on the landside. Check-in is the domain where passengers submit their tickets and passport for processing by the airline staff, and allow their baggage to be registered for the flight. The literature shows that fast and efficient check-in is important to passengers (Consumer Protection Group, 2009). Long check-in queues are argued to significantly impact on passenger satisfaction at an airport. Furthermore, inefficiency is regarded as a major factor in a passenger's decision to switch airlines (Consumer Protection Group, 2009).

Data for queuing and processing at check-in is not currently available for Australian Airports; however, the UK Civil Aviation Authority (CAA) observed passengers at 4 UK airports and found that the mean time for queuing was between 9 and 10 minutes, and 83% of passengers queued for less than 10 minutes (Consumer Protection Group, 2009). The acceptable queue time is deemed to be 12 minutes for economy, and 3 minutes in business class (Kazda & Caves, 2007a), and the majority of passengers should be satisfied by these times. There has been a decrease in check-in time at many airports, which has been attributed to self-service kiosk check-in (Consumer Protection Group, 2009). Advantages of self-service check-in is argued to include a reduction of business costs, and a passenger preference for this method – particularly in online mode (Consumer Protection Group, 2009; Li, 2012). However no disadvantages are considered in the literature.

Check-in times can have knock-on effects on the processing time at other processing domains, as many passengers are being processed for flights at the same time. For example, at some airports, most flights leave early morning, and a peak in passenger flow at all areas of the airport can be seen between 0700 and 0930 (Kraus, Personal Communication, July 19, 2009). This means that passengers who arrive between 0700 and 0930 may queue for a longer perceived time and be dissatisfied with the service at all stages, as all stages are experiencing peak demand during this time.

Once passengers are processed at check-in, they now have the option to undertake discretionary activities (such as eating, shopping, or talking to the people who dropped them off at the airport), or to move to the next processing step (Figure 2.4). While passengers remain in the area before security, they are on the landside of the airport (Figure 2.3). This area can be accessed by any member of the public, whether they are flying or not. Once passengers move to the next stage, namely security, they move from landside to airside. Airside is a strictly controlled area, where anyone entering must have a reason to be there, such as flying or working for the airport. Every person, with the exception of the Australian Federal Police (AFP), must pass through security (Kraus, Personal Communication, July 19, 2009).

2.4.2 Security

Security is the responsibility of the airport owner; in Australia this is contracted out to specialist companies to process passengers at this domain interface. Security is

the barrier between landside and airside; however, as only passengers can enter this area, it can be regarded as the start of airside (Figure 2.3).

Processing of passengers and their hand luggage involves checking for any illegal items. Currently, security requires a walk-through detection device, an X-ray machine for accompanied baggage, and space for manual searches and recovery of the X-rayed items. The security interface is argued to be the most important aspect of the airport procedures, and must balance security outcomes with efficient management of passengers (Department for Transport, 2007; Department of Infrastructure, Transport, Regional Development & Local Government, 2008c). Since the 1960's, security has evolved into a vital aspect of the airport process. Recently, the complexity of this domain has greatly increased. There has been a massive increase in security over the past 10 years in particular, due to the terrorist attack on the Twin Towers in New York on 11 September 2001 (9/11). This attack led to a significant change in the previous perception of the terrorist threat. This previous perception is illustrated by Kazda and Caves (2000b, p. 284):

"Only a few terrorists are so dedicated that they will liquidate themselves."

From 9/11 onward, most people no longer considered this statement to be accurate. 9/11, and subsequent terrorist attacks, have led to new legislation, which adds further complexity and increased processing times to the airport experience (Department of Infrastructure, Transport, Regional Development & Local Government, 2008a). These changes have included additional screening of laptops, mobile phones and shoes. Limits have also been placed on the amount of jewellery and other metal objects that can be worn, all of which have to be removed prior to passing through the detectors. There have also been limits imposed on the amount of liquids, aerosols and gases (LAGs) allowed to be taken in hand-luggage (Kazda & Caves, 2007b). All of these changes have resulted in substantially increased costs to airports in money, time and resources (Kazda & Caves, 2000a). They have also added increased processing complexity for passengers.

As security is the domain most subject to change at the airport (Cox, Personal Communication, December 8, 2010), passengers may be the most unsure of what is required of them at this domain, and they can be anxious about what they can and cannot carry with them (Jones, 2012). This is illustrated by the International Civil Aviation Organisation (2007) which found that LAG restrictions cause confusion,

inconvenience and financial loss to air travellers as procedures are unclear and are not internationally standardised. The restrictions were due to be lifted in the European Union in 2011/12 (Lumley, 2009) but this has been postponed, and Australia is now to become the first country to lift the LAGs ban (due in 2013) (Walton, 2011; CAPA, 2012). This will lead to more disparity and uncertainty for international travellers of what can and cannot be carried.

2.4.3 Customs

The Customs domain interface is controlled by the Australian Customs and Border Protection Service, an Australian Government agency. To pass through customs, passengers present their passports, the boarding cards given to them at check-in, and their outgoing passenger card (OPC) to the Customs officer. The passenger's details are checked and their 'right-to-fly' confirmed. The most important processing step is that the OPC is correctly completed (Rehbein AOS Airport Consulting, 2007). In the Rehbein research, a significant number of passengers were observed arriving at the officer without a completed OPC. They were then required to return and fill out the card, thus reducing the efficiency of processing and frustrating passengers (Rehbein AOS Airport Consulting, 2007).

Customs and security are tightly bound, as passengers proceed directly from one domain to the next. However, each of the two domains is controlled by distinct stakeholders: customs by a Government Agency; and security by a specialist private company. This can lead to conflict between the domains. For example, it is argued that it is often hard to persuade government offices (i.e. customs) to open more desks when the flow of passengers increases as a result of the security domain altering its throughput of passengers (Kazda & Caves, 2007a). The alternative is to reduce the number of staff processing passengers, thereby reducing the number of passengers moving through to customs. This increases the queue time at security, but reduces the queues at customs. This delivers an overall smoother flow over both domains (Kazda & Caves, 2007a). However, this means a longer queue at security, which is considered as a negative experience associated with the security domain. Domains are measured in their efficiency by queue time (Chapter 3), so by attempting to deliver a smoother flow overall security may reduce their measured efficiency. An additional problem for customs is that, as a Government controlled area,

observational research is restricted. This limits the review of the service provided in the customs domain.

2.4.4 Boarding

Boarding of passengers is the responsibility of the airlines and can only commence when the plane is ready for departure. Boarding cards and passports are checked by airline staff at the gate, and passengers then board the plane. The layout of the boarding domain varies between airports. In some airports, each gate is a room specifically allocated for one flight, and passengers wait in this enclosed space. Other airports leave the space open so that passengers are free to leave the area. All boarding areas have a seating area for passengers to allow them to arrive early and await boarding.

There is a conflict in this domain between the airline's desire to have passengers wait in close proximity to the gate, and the passengers' aversion to being confined in an area with few facilities for what could be perceived as an indefinite period of time (Kazda & Caves, 2007a). However, improvements in the technology that calls passengers to the gate have allowed airlines to decrease the time that passengers spend in these areas. This means that there is increased discretionary time for passengers to spend as they see fit, potentially in the retail area (Barber & Durie, 2008). This discretionary time can include time after the flight has been called, when passengers have the option to proceed immediately to their boarding gate, or to spend this time at other locations. However, if the passengers are not at the gate when required, this could cause delays in the boarding process, leading to delayed departure.

2.4.5 Discretionary periods

The areas in which passengers can spend the majority of their discretionary time while in the airport precinct are under the control of the airport. Underhill (2008) estimates that passengers spend around two thirds of their total airport experience within these areas. In Departures, there are three periods where the passenger has discretionary time: pre-check-in landside; post check-in landside; and airside (Section 2.3). During these periods, passengers are provided with the opportunity to eat, shop, and rest. At a minimum, the airside departure area needs to have space for various activities such as: waiting for flights to be called; queuing for

flights; using telephone and toilet facilities; and for catering purposes (when flights are delayed after passengers have passed through security). Additionally, many airports provide duty-free shopping areas. Kazda and Caves (2007a) consider stationers – or newsagents – and drug stores to be essential, while Aza and Valdes (as cited in Torres, Domínguez, Valdés & Aza, 2005) suggest that minimum requirements include banking facilities, a cafe, gift shops, and a newsagent. The availability, diversity and pricing of shopping has become one important benchmark that surveys use to assess the world's best airports (Skytrax, 2009).

Research into the discretionary periods has focused on the shopping experience (Loo, 2008); other discretionary activities that passengers undertake have not yet been explored. Even though the shopping experience is the most researched discretionary activity, the focus has been on the amount of money passengers spend. This is a narrow focus of how passengers may use their shopping time. Perng, Chow and Liao (2010) suggest that this research is even more limited as it focuses on the airside discretionary period only. Thomas (as cited in Perng et al., 2010) argues that the stress of processing has been replaced by excitement on the airside because three of the four processing domains have been completed; boarding is the only processing stage remaining. He argues that more retail activity could result from this heightened excitement. However, this should not mean that the other two periods – pre- and post-check-in – should be ignored from the understanding of passenger experience, which they currently are.

Retail is a growing activity in airports, and the search for new ways of increasing revenue, particularly in non-aeronautical services, is underway (Torres et al., 2005). Castillo-Mazano (2009) concludes that by minimising the time passengers spend being processed, more time can be allocated to purchasing non-aeronautical products and services, and therefore increasing airport profits. Other authors argue that the relationship between processing time and spending is not as simple (Harrison, 2012; Livingstone et al., 2012). Further research is required to understand this relationship, and how passengers spend their discretionary periods when not involved in retail activities. There is a large gap in the knowledge of the discretionary period, which needs to be investigated further.

2.5 SUMMARY

As stated above, the airport experience is extremely complex, with many interactions occurring to ensure the efficient running of the airport. Many of these interactions are behind the scenes and occur without the passenger's knowledge. The processes that the passenger must undertake can be seen in Figure 2.4. To be able to improve the passenger experience requires an understanding of what passengers do at the airport, both at the processing domains and during discretionary periods. Currently there are large gaps in understanding of the passenger experience, particularly the discretionary periods. The next chapter discusses the current measures of passenger experience available in the literature and their limitations in capturing the holistic experience of passengers.

Chapter 3. Current measures of passenger experience

3.1 INTRODUCTION

This chapter first reviews the general methods used to understand the overall customer experience in airports. It then describes the specific measurements that airports currently use to determine the quality of passengers' experiences.

3.2 UNDERSTANDING PASSENGER EXPERIENCE

There are various methods used to investigate customer experience in numerous customer-focused industries. The methods most commonly used are:

- Benchmarking the customer experience
- Questionnaires and interviews with customers
- Questionnaires with stakeholders/interested parties
- Modelling of the experience
- Direct observation of the experience

To date there is still no consensus on the "right" tool to use to measure customer experience (Shaw & Ivens, 2005, p. 4). While the above methods are all used to investigate passenger experience at airports, Dale and Brian (2007) argue that the available literature on the quality of airport experience is generally sourced from discussions with stakeholders, such as airport management, rather than passengers. This literature is, therefore, not indicative of the actual passengers' needs or desires.

The five most commonly used methods to investigate customer experience, and their general application to customer focused industries, are now considered and reviewed. This will be followed by a discussion of the methods' specific applications to the airport situation and how they fall short in understanding the complete passenger experience.

3.3 BENCHMARKING

Benchmarking emerged as a tool to foster and measure continual improvement in the 80s, and was regarded as the way to take the mystery out of competitiveness (Goetsch & Davis, 2004). However, to successfully undertake benchmarking, companies must be willing to learn from one another. Xerox, for example, successfully used benchmarking to regain its market share by studying its own performance against Japanese competitors (Goetsch & Davis, 2004). Valuable insights can also be gained by comparing the performance of an airport with its international counterparts. International benchmarking of airports offers a significant insight into areas where individual airports can focus resources to improve their ranking, and create a competitive advantage (Francis, Humphreys, et al., 2002). However, while current benchmarks are predominantly used to gain financial, environmental and operational perspectives they are rarely applied to improve the passenger experience (Gonnord & Lawson, 2000; Francis, Fry & Humphreys, 2002; Humphreys & Francis, 2002; Graham, 2005; Oum & Yamaguchi, 2011).

Airport Service Quality (ASQ) Performance is an example of a benchmarking program which concentrates on passenger satisfaction. ASQ is used by over 100 airports around the world (Airport Council International, 2008). This program uses three core elements to benchmark airports: (i) a survey to measure passenger perception of an airport's quality; (ii) a certification program that defines best practice and audits each airport against that benchmark; and (iii) the actual service delivery performance in key indicator points, using real-time data for queues. The data for benchmarking is compiled through questionnaires of passengers, staff, and direct observation of passengers (Sections 3.4, 3.5 and 3.7). Currently, however, there is no available literature to show how airports are applying the results of the benchmarking data to improve passenger satisfaction. Francis et al. (2002), for example, reflect that benchmarking can identify areas for improvement, but not the ways in which to improve these areas. There is a lack of practical application of the benchmarks. Performance benchmarking for airports is, therefore, simply a reactive measurement of passenger satisfaction, requiring passengers to find an event significant enough to report back through interviews or questionnaires (Graham, 2003). It identifies problem areas but lacks application to their solution. Therefore,

this approach is not a useful methodology to understand the complete passenger experience as it focuses on individual domains and not the whole experience.

3.4 CUSTOMER QUESTIONNAIRES AND INTERVIEWS

Provided that they are well designed, questionnaires can be effective tools for collecting customer information. Factors such as "why" limitations, bias, validity, meaningfulness and reliability must be considered (Goetsch & Davis, 2004) for the questionnaire to be designed and structured appropriately to provide valid customer feedback. If the right questions are asked, surveys can provide a great deal of feedback. Analysis of the information provided in this feedback can be used to improve the customer experience. For example, as a result of passenger surveys, the British Airport Authority (BAA) airports prioritise customer service issues – such as acceptable queuing times at check-in and security – when improving key areas of passenger experience (Consumer Protection Group, 2009).

Questionnaires have many different uses in airport research. They are used to understand the greatly varying demographics of passengers; for example, the nationality, age, reason for travel, and frequency of travel (Tourism Forecasting Committee, 2009b). Questionnaires are considered an efficient method of directly determining passengers needs (Yeh & Kuo, 2003). The Civil Aviation Authority (CAA) survey (Consumer Protection Group, 2009), for example, found that while passengers using budget airlines expect a lower level of in-flight service, they expect similar in-airport service and processing times (Myant & Abraham, 2009). This is very important information for airports as the increase in the number of budget airlines (where passengers are often paying very low prices compared to the full-service airlines), has grown substantially over the past decade. However, surveys conflict on the importance of income from low-budget airline passengers in the context of overall airport revenue. Some research shows budget passengers contribute greater than average use of in-airport services from the low cost carriers (Barrett, 2004; Graham, 2009), while other research shows the same or less income (Castillo-Manzano, 2009). The authors fail to make it clear what factors contribute to the conflicting results. Further research would be required to understand the contributing factors.

Surveys also illustrate the key issues in the overall departure and arrival experience. The CAA passenger survey (Consumer Protection Group, 2009) found that the two key drivers for satisfaction during the departure experience were: time taken to get through the airport; and reliable information on flight times and departure gates. This overlaps with the findings of Caves and Pickard (2001), who showed that safety, time, and the elimination of unknowns are the most important factors for passenger "wellbeing", or satisfaction. Other key issues identified for a positive overall experience were helpfulness and customer service attitudes of staff, and the amount of seating available airside (Consumer Protection Group, 2009).

An interesting measurement was used by BAA in its quality service monitoring, where passengers were asked how long they had waited. Analysis showed that passengers thought they had waited in security queues 'significantly' longer than performance data reported (as cited in Consumer Protection Group, 2009, p. 13). This may be due to a difference in passenger recall, or a difference in where measurement starts and finishes. This comparison of actual times and perceived times, and perceived times and passenger satisfaction scores is an insightful measurement. It shows what actual times and perceived times passengers are satisfied with, and can allow 'interventions' – activities to reduce the perceived time taken in queuing – to be put in place. These activities can, therefore, increase satisfaction ratings without speeding up the time of processing (Transportation Research Board of the National Academies, 2008). However, the research does not explain what interventions could be put in place, and further research using passenger observation is suggested by the Transportation Research Board.

Interventions have been used in other industries to improve customer satisfaction with queuing and included interventions that could be put in place, improving on the airport experience research. For example, theme parks have curved their waiting lines. This tactic demonstrates a reduction in the length of time that customers think they have queued (Norman, 2009). Theme parks have also provided entertainment to engage people while queuing. This also reduces the perceived waiting time as customers are kept mentally active watching the entertainment, and are not focused on the length of time spent in the queue (Norman, 2009). The approach used by Norman was through observational research and not questionnaires. Therefore observation may be a more useful methodology to use to

understand how to improve queuing experience. Observation is discussed further in Section 3.7.

The use of questionnaires to understand the passenger experience also suffers from the problem of how the questions originated. Yeh and Kuo (2003) argue that much of the past research is typically designed from a managerial rather than passenger focused. This means that questionnaires are asking passengers about what a manager thinks is important to them. As there is a difference in what is important to customers, and what managers consider important to the customer, this can ultimately result in misguided efforts to improve the customer experience, and failure to address customers' actual needs and desires (Yeh & Kuo, 2003). Fodness and Murray (2007) agree with this view, arguing that changes to the passenger experience that are based on data determined from a manager's perspective may fail to improve the passenger experience. These changes focus on the most obvious and easily workable from the management perspective.

Norman (2002) takes this view further, arguing that focusing on a manager's point-of-view leads to overlooking the problems that consumers actually encounter. He argues that those close to a product or service may not see the problems that consumers may have. Even when managers become users, their deep understanding of a product or service informs their use of that product or service. An infrequent user, on the other hand, must rely almost entirely on knowledge they have gained through previous analogous experiences.

Fodness and Murray (2007) claim to have improved on previous research by concentrating on measuring passengers' expectations. They took passenger responses from an unspecified airport website and used data from in-depth interviews and focus groups to compile a model of passenger expectations of the airport experience. The study shows that the services available to passengers during their discretionary time are critical to the way in which they view their experience. The authors argue that current research lacks a "comprehensive profile of the experiences, expectations and perceptual influences of passengers" at airports (Fodness & Murray, 2007, p. 493), and that a more explicit and systematic investigation of customers' activity goals is needed to fill this gap. However, the authors have not published a comprehensive profile of passenger experience.

Another questionnaire survey tool has been used in the airport industry on a world-wide scale, giving an unprecedented number of respondents (Skytrax, 2009). In 2008/9 more than 8.6 million questionnaires were completed by airline passengers from over 95 countries, and 9.8 million were completed in 2009/2010 (Skytrax, 2010). The results of this questionnaire led to the regional ranking of the top twenty airports in the world; for example, the top three in Europe, or in Australasia (Section 3.3). This is a valuable source of information on the satisfaction levels of passengers at the various airports around the world. However, Skytrax do not state (on their website) how the aspects of passenger satisfaction measured were selected. These aspects could have, again, originated from an airport management perspective. The questionnaires would therefore, suffer from originating from a management perspective, thus failing to consider problems that passengers themselves actually encounter (Norman, 2002; Yeh & Kuo, 2003). Skytrax allows passengers to identify actual problems encountered during their airport experience on the Skytrax website; however, this data does not appear to be used in the survey results. It is also not clear from the website how this information was fed back to individual airports, or if the airports are using the information provided by passengers to improve passenger experience.

The Transportation Research Board of the National Academies (2008) reviewed the Skytrax website and two other websites that investigate passenger satisfaction through on-line passenger questionnaires. They documented the issues commonly identified by passengers as having a negative or positive effect on their experience, and these include:

- way-finding
- vertical transition between levels
- walking distance
- availability of self-service check-in
- queue length

The Transportation Research Board concluded the research by discussing innovations that have solved the various problems identified through the passenger review. These innovations were evaluated against two criteria: their ability to mitigate the perceived problems; and their ability to address specific issues of

particular airports. Whether multiple innovations could be combined to enhance the overall passenger experience was also considered. However, the research only investigated the landside passenger experience, and did not consider the issues and innovations once passengers were airside. This approach does not take account of the complete experience, but concentrates only on how passengers are processed.

Customer questionnaires and surveys are useful tools for airports in identifying passenger's problems. However, like benchmarking, they are reactive measures to problems that have been allowed to escalate to become significant enough for passengers to report them. The questionnaires lack a passenger focus, although they discuss taking this focus, their origins can be traced back to the management perspective. For example, the Transportation Research Board of the National Academies (2008) research used the surveys from Skytrax (2007, 2010), whose surveys may have originated from the management perspective. The management perspective is argued to miss what is important to the passenger (Norman, 2002; Yeh & Kuo, 2003).

3.5 STAKEHOLDER QUESTIONNAIRES AND INTERVIEWS

When undertaking a customer survey, it is extremely beneficial to survey other stakeholders, such as management and employees, at the same time (Lyons & Urry, 2005). This approach can identify areas that customers consider important, but which stakeholders may be neglecting. It can also identify situations where communication between stakeholders is impeding customer service. The CAA (Consumer Protection Group, 2009) observed significant problems between stakeholders which can account for long queues at various stages of the airport experience. For example, the airline community expressed concerns about queue lengths at security (at Departures), and immigration (at Arrivals) for all airports considered in the assessment. The airlines stated that the key issue was the airports owners' failure to roster sufficient staff to deal with peak times. However, BAA reported that many of the airlines either failed to provide passenger numbers, or did not provide them early enough to allow planning for staff rostering.

Service levels were discussed during the CAA interview process, thus, giving an insight into the level of service a stakeholder considers acceptable. For example, the UK Border Agency has historically worked to a 45 minute maximum queue

standard, which other stakeholders consider unacceptable (Consumer Protection Group, 2009). Through discussions facilitated by the CAA, there was agreement on the objective of shortening queues at border control to 25 minutes. The UK Border Agency also attempted to improve passenger service; this involved working more closely with BAA, as well as improving its communication with airport passengers. This process is on-going, and results are yet to be published (Civil Aviation Authority, 2012).

Baggage Reclaim was highlighted as the least satisfying area of the passenger experience, and this issue was raised with stakeholders in interviews and discussions. Both airlines and airports highlighted a lack of incentive for improving baggage handling (Consumer Protection Group, 2009). However, working groups of stakeholders at the UK airports did start to discuss the improvements. While it was agreed in the meetings that procedures should be developed, there is no information on how this is progressing, or if there has been an improvement in baggage reclaim at any of the airports.

While stakeholder questionnaires and interviews are vital to improving the passenger experience, there is a lack of input from the passenger. When discussing how the passengers are affected by long security queues or baggage reclaim issues, there was no input from passengers. The perspective taken was how the management viewed the passenger experience. Section 3.4 identified how this approach can fail to identify the real problems that passengers are experiencing. A better approach to understand the passenger experience would come from finding out what is important to passengers and then discussing these issues with stakeholders. This approach would allow airport stakeholders to understand what is important to passengers from their actual experience, rather than showing stakeholders what is important to passengers from the perspective of stakeholders.

The previously discussed methods of benchmarking, questionnaires and interviews highlight problematic issues from passengers within airports, such as the baggage reclaim process (Consumer Protection Group, 2009), drivers of satisfaction, such as safety and processing times (Caves & Pickard, 2001), and issues concerning way-finding and queue length (Transportation Research Board of the National Academies, 2008). One approach to understanding current, and future, problems is to use the results of benchmarking (Section 3.3), questionnaires, interviews (Sections

3.4 and 3.5), and observational data (Section 3.7) to design a model of specific airport domains. Such modelling enables the abstraction of problems to aid in the planning, design and facilitation of the operations involved in passenger processing (Tosic, 1992).

3.6 MODELLING AND SIMULATION

Airport modelling has a wide variety of applications within the aviation industry; however, a relatively small amount of this work is published due to its commercial and confidential nature (Barber & Durie, 2008). The literature does document some investigations of various airport domains, and the overall experience in an attempt to improve customer experience, to identify bottlenecks, and to develop capacity. To model the passenger experience, data is taken from various sources, including: management information on forecasting passenger numbers (Tosic, 1992; Loo, Ho & Wong, 2005); international formula designed to facilitate passenger processing (Kiran et al., 2000; Barber & Durie, 2008); field observations (Takakuwa & Oyama, 2003; Van den Briel et al., 2005); and existing research results (Castillo-Manzano, 2009).

Modelling has been used to understand parts of the passenger experience. Takakuwa and Oyama (2003) investigated the check-in process, and observed people in international departures. They included data on where passengers waited, where they were processed, where they moved and where they filled in their discretionary time. They then put this data into a simulation to show that the check-in process was bottlenecked during busy periods. Kiran, Cetinkaya and Og (2000) simulated an expansion of an international airport before the expansion was completed. The results showed that bottlenecks can occur at check-in, passport control, gate allocations and boarding gates. Torres et al. (2005) used modelling to understand the relationship between expenditure and discretionary time, and suggested that the longer the discretionary time, the higher the level of expenditure. Recent research shows, however, that the relationship between discretionary time and expenditure is not simple and that other factors affect the amount that passengers spend (Livingstone et al., 2012).

Van den Briel et al. (2005) used modelling to recommend a passenger boarding strategy to shorten boarding time and make the process as efficient as possible. The

method the airline used at the time was to call passengers who had seats at the back of the plane, then to progressively seat passengers from the back to the front. Direct observation revealed that this boarding strategy caused an unnecessarily high amount of obstructions among passengers. However, by using a “reverse pyramid” strategy boarding time was reduced by over two minutes. This strategy involved loading from window to aisle, and dividing the passenger load into six groups. Raymond, de Vries and Chong (2006) argue that although this method is efficient, in the real world it would meet resistance when families and colleagues are broken up in the boarding process.

Thus, it can be seen that modelling a process (such as boarding) can fail to reflect real world considerations, where mitigating circumstances and exceptions can often diminish the theoretical effectiveness that a model indicates. Schwartz (cited in Minton, 2008) goes on to argue that models fail to understand people’s own social organisation. All the above examples of how modelling can be used to understand the passenger experience (Kiran et al., 2000; Takakuwa & Oyama, 2003; Torres et al., 2005; Van den Briel et al., 2005) do not adequately consider real world circumstances. A model could be potentially improved by increasing its complexity; for example, in Raymond et al. model, by allowing groups to stay together. Chwif, Barretto and Paul (2000) argue, however, that models become harder to implement, analyse and validate as they become more complex; they should thus be kept as simple as possible. Barber and Durie (2008) agree, stating that there should be a return to basics when trying to model the passenger experience.

To ensure a model’s simplicity – and in turn, its validity and reliability – researchers should consider the passenger experience in individual airport domains, rather than their whole experience (Chwif et al., 2000), which means that rather than looking at the whole airport experience, they should look at the separate domains. In contrast, Gomez, Popovic and Bucolo (2005) argue that the overall experience cannot be explained by considering the various components of the process individually (the reasons for understanding the overall experience will be elaborated further in Section 3.7). This implies that modelling may not be an appropriate method to understand the complete passenger experience, as the models would become too complex.

3.7 DIRECT OBSERVATION

The final method to be discussed is direct observation of passengers. This method has the potential to improve understanding of the overall passenger experience. Direct observation has been discussed as a method to further understand the results of benchmarking, questionnaires, interviews and modelling. Methods of direct observation of passengers include: timing how long it takes them to get from Point A to Point B; observing their individual activities at Point A; noting how they get from Point A to Point B, and observing their activities at Point B.

The main direct observation technique used at airports is to record the time it takes passengers to get from Point A to Point B. In a recent paper, previously discussed in Section 2.4.1, the CAA used the direct observation technique (Meyer & Schwager, 2007; Consumer Protection Group, 2009) and found that queuing times were acceptable to passengers. This was an improvement on previous years, and was attributed to recent initiatives to speed up check-in via the use of self-service technology. This success in improving check-in perception led the CAA to state that they had "no further proposals for improving check-in procedures" (Consumer Protection Group, 2009, p. 10). In the same report, queuing time for passengers at border control rated poorly. The CAA asserts that future self-service options in this domain can expect to expedite this processing, reducing queue times, leading to improved satisfaction. However, it assumes that reducing queue times will improve the satisfaction of passengers.

As shown previously (Section 3.4) passenger satisfaction is not simply a matter of expediting processing time. It is unlikely that passengers would have an increased satisfaction level if they had to spend 10 minutes struggling to understand a new piece of technology, rather than queuing for 20 minutes. Indeed, it is likely that both scenarios would cause frustration and dissatisfaction. Thus, the use of time taken as the major indicator to assess how successfully a domain is working fails to consider the experience of the passenger; rather, it simply considers average time taken to complete a process. While the method identifies where problems exist, just like benchmarking, interviews and questionnaires, it is reactive to problems that are significant enough to be reported. The reduction of queuing leading to increased satisfaction is an example of Murray's (2007) view; improvements focus on the most

obvious and easily incorporated into processing domains that are assumed will improve the experience (Section 3.4).

Caves and Pickard (2001) take the observational approach further by proposing to observe passengers as they move through the airport to improve the airport experience. However, they did not directly observe passengers; rather they role-played the passenger experience, and recorded their own way-finding experience. They investigated the experience of visually impaired passengers; however, instead of observing visually impaired passengers, they used glasses to simulate visual impairments and created a visibility index for various airports. Kazda and Caves (2000a) argue, however, that airport design and layout will only improve as a result of knowledge gained from direct observations of passenger behaviour. They state that improvement will come from the:

> *"realistic appreciation of the dynamics and behaviour of sequences of queues, the psychology of crowds in such situations, and the ways airport users truly allocate the time they spend in passenger terminals."* (Kazda & Caves, 2000a, p. 253)

To truly understand and improve the passenger experience, the passenger should be observed through their airport experience. The approach of Caves and Pickard (2001) does not do this, as their research misses the important experiences visually impaired passengers would face different problems to the role-playing investigator. Caves and colleagues fail to use this "realistic appreciation" in their research. Other authors have also proposed the observation of passengers as the way to improve passenger experience (Graham, 2003; Kazda & Caves, 2007b, 2007a; Minton, 2008; Underhill, 2008; Castillo-Manzano, 2009; International Air Transport Association, 2010), however, little research has been published using this approach.

Shaw (2007) and Minton (2008) are two examples of research that proposed to directly observe the passenger experience at check-in. In Shaw's research, the airline being observed used the time taken to process passengers at check-in, and the number of on-time departures, to assess passenger satisfaction. These measurements failed to identify any problems in passenger processing, even though customer satisfaction had been declining for 10 months. However, Shaw observed that their dissatisfaction was not associated with any of the measurements used by the airline to measure passenger satisfaction. Their dissatisfaction lay with the fact that they

were not sufficiently emotionally engaged with that experience. This lack of engagement was attributed to an increased level of frustration, irritation and dissatisfaction during the experience. One reason identified for this emotional dissatisfaction was poor customer interactions with staff, which were due to staff being asked to work longer hours. Shaw (2007) argues that further training and employment of additional staff would increase both customer satisfaction and revenue.

Shaw's use of direct observation proved useful in finding the reasons why satisfaction was declining; these reasons would not have shown up in the measurements used by the airline. His suggested improvements came from the emotional survey of customers, rather than the direct observation of customers. Minton (2008) focused on the experiences of passengers within the queuing system at check-in, and on the check-in agents' perceptions of passenger behaviour. The study revealed that passengers relied on staff and ecological supports, (barriers and ropes) to enforce queuing norms. Minton's (2008) study also found that many passengers were reluctant to use new technology due to social embarrassment. This is contradictory to other research which only considers positive aspects to the addition of technology. For example IATA (2010) continually espouses the benefits of technology to improve the passenger experience. Both Shaw (2007) and Minton (2008) recognise that further research is necessary to fully understand the check-in experience, and allow further recommendations to improve check-in for both passengers and staff.

Direct observation has also been used in other areas of transportation, such as public transport, as a tool for improving the passenger experience. For example, Watts (2007) used an ethnographic approach to describe a passenger's train journey in great detail. She observed various aspects of the journey, such as the time taken; the configurations of the passenger (what she unpacked from her bags, and when she repacked the items); problems that occurred during the journey (such as the lack of luggage space); and interactions with other passengers and staff. While the study did not address ways in which the train experience could have been improved, it did conclude that this would be the next research step – the development of a "travel remedy kit" (Watts, 2007, p. 23). However, Watts did not discuss if she would observe any further passengers. The use of details from one passenger will not allow

the development of a comprehensive kit; more passengers would need to be explored for this development. However, it does show that direct observation is a useful way to provide a deeper understanding of the passenger experience.

From anecdotal evidence, Lyons and Urry (2005) assessed how passengers spent their travel time on public transport. They suggested that passengers can use this time profitably in activities such as sleeping, talking to others, listening to music, or texting. They go on to suggest that this potential productivity can affect the behaviour of the traveller, both directly (by influencing route choice, or choice of transportation mode) and indirectly (for example, resting might provide a person with more energy). They suggest that public transport should provide appropriately designed places that engender affordances for multiple activities and various ways to use time (Watts & Urry, 2008). This affordance would provide options for passengers to manage their own time, thus reducing the perceived time spent waiting, positively contributing to the travel experience. Although this approach provides an understanding of how passengers use time, it lacks rigor as it only uses anecdotal evidence.

Rowley (1999) also investigated customer experience through observation. She watched two groups of customers going through two different museums, and described their journey. This information was used to develop a walk-through audit for use by management – a valuable tool, Rowley (1999) claims, in enabling management to truly understand the customer's experience. The research has two limitations, however: (i) a small participant pool, and (ii) a failure to provide the information necessary to improve the problems identified. Norman (2002) used a similar method to Rowley, observing visitors on their journey through a San Diego museum. He observed that although the visitors appeared to be enjoying the visit, it was clear that they were struggling to read the displays, and had problems with the language used on these displays. In contrast to the Rowley (1999) study, Norman (2002) also considered how the users interacted with the display interface. Norman was able to suggest improvements to the displays and to the language used so as to help staff to improve the overall customer experience. Therefore, observation is a useful approach in understanding the customer experience and provides a novel approach to understanding the passenger experience at places such as airports.

3.8 SUMMARY

Investigative approaches currently used in airports target specific airport domains, and concentrate on the time taken for passengers to be processed at these various domains. While timing is an important measurement airports use to assess airport efficiency, the existing research does not identify where efficiencies could be made. While questionaries, surveys and benchmarking can identify key problems that passengers have, they do not identify solutions to these problems. Modelling also has its limitations. While it is useful for illustrating bottlenecks and predicting future problems, the complexity of the airport context means that it may not be useful for capturing a whole-of-airport perspective. Therefore the existing methods do not provide the information necessary for understanding the complete passenger experience, which is identified as necessary to discover improvements.

The literature also raises the question of whether current measurements are addressing issues that are important from a management perspective, rather than those that are important to a passenger. A focus on the passenger has been discussed as the critical factor in identifying problems and developing solutions to the passenger experience. Observation is one way in which customers' interactions with interfaces, or employees can give insight into how the passenger experience can be understood and supported. Shaw (2007) shows that simply looking at the processing time ignores the problems that are being experienced by the customer. Lyons and Urry (2005), and Norman (2002) demonstrate how direct observation can be used to improve both the customer and employee experience in various situations. Their observational approach focuses on how people actually use an interface in the real-world, and how it could be designed to support the customer experience; for example, by placing the passenger – as an important customer of the airport – at the centre of the experience to better support the interactions.

Chapter 4 now considers how research can concentrate on the passenger experience, while also taking a whole-of-airport perspective.

Chapter 4. Towards a passenger focused understanding of the airport experience

4.1 INTRODUCTION

The previous chapter discussed the various methods currently used to understand the passenger airport experience, and how they fail to consider the complete passenger experience. The chapter concluded by discussing how direct observation allows the whole experience to be explored. This chapter reviews the three main methods used to investigate people's experiences: (i) a product-focused approach; (ii) a human-focused approach; (iii) an activity-focused approach. The method selected for this study is then justified. The chapter concludes by showing how the chosen approach contributes to a better understanding of the airport experience.

4.2 THE USER-CENTRED PERSPECTIVE

A user-centred approach integrates the user's perspective into a system or product to achieve greater usability (Maguire, 2001). It is argued that this approach can increase usability, reduce operational errors, reduce time spent in learning a new system, and increase the acceptance of new technology. In other words, studying how a user interacts with an interface can lead to future improvements in that interface and in their experience with it. Analogously, it is argued that through direct observation of customers interacting with services, and understanding what customers like and dislike about a service, that service can be made more user-friendly. This approach can provide a company with a competitive edge through innovations that improve their customer's experience (Brown, 2008). Espoused by Brown (2008) and Maguire (2001), this type of approach has been proposed for the future direction of airport research by the UK's Department of Transport (2007) and USA's Transportation Research Board of the National Academies (2008) (Section 2.2). However, there is no available research that has taken this approach, other than that of the author and colleagues (Kraal, Popovic & Kirk, 2009; Popovic et al., 2010; Kirk et al., 2012; Livingstone et al., 2012).

Battarbee and Koskinen (2008) suggest that there are three strategies that can be used to understand the interactions between a product and a user's experience:

1. A product-focused approach – the simplest focus, where the product is considered as the source and cause of all experiences
2. A human-focused approach – which holds that there is an infinite number of possible experiences and that products can support or hinder these experiences
3. An activity-focused approach – which focuses on the interactions and activities between product and user. This approach integrates the above approaches, but moves the focus from the user, or product, to the activity.

4.2.1 Product-focused approach

A product-focused approach has been used to understand website design, with a particular focus on what errors users made and why. Traditionally, errors were attributed to a mistake made by the user in their interactions with the interface; however, current approaches treat errors as a mismatch between the human-system interaction (Nemeth, 2003). This moves the responsibility for the error away from the user, and investigates the failure in the interaction between the user and the product. Garrett (2002) suggests that the solution to this mismatch can be achieved by breaking down the experience into its components, accounting for all user decisions, and subsequently avoiding and managing errors in design. Garrett investigates the user-product mismatch by considering the web as a product, arguing that the web is a "self-service" product with no instructions, training or customer service provided. However, Battarbee and Koskinen (2008) argue that Garrett's approach does not take into account the user's emotional desires and needs and the social context of use. In other words, they believe that it does not address the complexity of the interactions between the user and the system, and fails to understand the interaction between the user and the context of use.

The product-focused approach would not be an appropriate method to investigate the passenger experience as it focuses on the product. Current research is lacking a passenger focus, and this approach would not complete the gap in the knowledge of the passenger airport experience.

4.2.2 Human-focused approach

A human-focused approach has also been used to understand how people use products and services. This is an improvement on the product-focused approach as it investigates the interaction of the user and the context in which it occurs. One of the earliest such investigations was carried out by Whyte (1980) who looked at people's behaviour in a built environment. Using time-lapse photography, hidden trackers, and interviews, he watched people engaging in various activities at urban plazas, undertaking behaviour such as socialising, sitting or napping. On the basis of his recorded observations Whyte suggested ways to improve the design of plazas for increased use by New York citizens, and this research remains important in the design of public spaces (Bhimarazu, 2008).

Underhill (2009) also took this approach and applied it to understanding how customers shop. His approach began by using a detailed map of a shopping precinct, and a tracking sheet that listed around 40 shopping behaviours. Underhill and his researchers then observed every aspect of people's movements through the precinct, either directly or by videorecording. For example, they recorded how customers picked up and looked at products, how they proceeded through checkouts, and how they left the premises. In particular situations the shopper was interviewed once they left the observation area. Findings from the analysis have informed the improved design of shopping premises to facilitate and improve both customers' satisfaction and retailers' profits (Underhill, 2004). For example, by watching customers in a lingerie store, Underhill observed bored and embarrassed men, and frustrated and rushed women. As a result, Underhill suggested that the store incorporate a seating area, situated away from the main shopping thoroughfare, and provided reading material suitable for men. By allowing men to sit in this area with an activity to keep them occupied, woman were able to shop for longer, without an impatient partner waiting (Underhill, 2004).

A human-centred approach concentrates on the user, with the tool being considered as a mediator in the experience. This approach has been criticised by Norman (2005). He argues that as the focus is on the human user, the artefact is tailored for the particular likes and dislikes of a particular population. This means that a design may not be appropriate for everybody. Also, the approach concentrates on the current user context of interaction and this context can change frequently. For

example, the way in which people access the internet has changed greatly since the development of smart phones: the importance of context of use may not apply to tomorrow's user.

The human-centred approach is not suitable for researching passenger airport experience. As discussed in Chapter 2 the airport has many domains that must change quickly. A terrorist attack can rapidly change the security process. Airports also have a varied demography, and so focusing on the user relies too heavily on a particular population. Battarbee and Koskinen (2008) argue that an interaction-focused approach should be used as it integrates the two foci of user and product. They claim that interactions, and the activities that occur in these interactions, are the key to making sense of all experiences. The interaction-focused approach has a similar premise to the human-centred approach, but focuses on the interaction, or activities, that occur; this avoids the need to tailor for the likes and dislikes of a particular population. When using an activity-centred approach, the product, user and context all become integrated into understanding the experience (Norman, 2006).

4.2.3 Activity-centred approach

An activity-centred approach has been used by various researchers (Norman, 1998; Gay & Hembrooke, 2004; Popovic, 2007; Kirk et al., 2012; Livingstone et al., 2012) to understand how users interact and understand interfaces in a social, cultural and emotional context. These aspects are all considered essential to understanding the experience of users (Popovic, 2007). The activity-centred approach attempts to understand the full experience of the interaction between human, product or service, and the overall activity (Norman, 2006). It investigates the experience through an understanding of the multiple actions that are required to reach the overall interaction objective (Gay & Hembrooke, 2004). Identification of the many actions, and the various components of the activity process, provides information to aid the understanding of the complexity of the activities required to reach the goal. To fully explore and understand an experience using the activity-centred approach, interactions between the human and the artefact(s) need to be understood within the particular environmental context where the activity takes place. Norman (2005) proposes that the activity-centred approach goes beyond a simple understanding of the user, and involves an understanding of the technology, the tools and the reasons for the activities.

Activity refers to the actions that a person needs to carry out to complete a task (Norman, 1998; Norman, 2002; Gay & Hembrooke, 2004; Popovic et al., 2009). To illustrate this, an airport example will be used. When a passenger enters an airport they have different tasks to complete. One task is to check-in, and this involves the activity of walking to check-in, and if other passengers are lined up for the same task they must queue. Once they are at the front they must walk to the desk and interact with the check-in staff and provide the necessary documentation. This is what is mean by activity; actions that are undertaken to complete the various tasks which sum to the complete experience. Activity can also include feelings and emotions (Bissell, 2007; Adey, 2008), however emotions are not considered in this research.

Activities, as defined above, have the benefit of being neutral; they are not reliant on the type of person carrying them out. Everyone has to undertake certain activities to complete a particular outcome. Therefore, the activity-centred approach focuses on the activities of passengers, and not the passengers per se. This is beneficial as it minimises any cultural effect in understanding the passenger experience. As activities are neutral the passenger demographics are not a consideration for this study. To illustrate this using the airport context, every passenger must queue up at check-in, wait to be served, walk up to the member of staff and hand over their documents. These activities are undertaken no matter what nationality the passenger is, or how experienced they are.

An additional strength of the activity-centred approach is that it provides a rich and complex data source to analyse the passenger experience. The approach focuses on the individual activities that passengers carry out to get through the airport, resulting in tens of thousands of individual activities and interactions. This abundance of data allows a deeper understanding of the passenger experience than currently exists.

The author and his colleagues (Popovic et al., 2009) have applied an activity-centred approach to the exploration of the passenger experience. This approach involved recording passenger activity from the airport entrance, until their time of departure. It also involved the exploration of specific airport domains to understand the passenger experience from a novel focus – that of the passenger. The individual activities that the passengers carried out throughout their airport experience were recorded and coded using The Observer (Noldus, 2011). These activities were then

reviewed at the individual domain (micro) level, and at the whole-of-airport (macro) level.

This research enabled the identification of ways to support the passenger experience at certain domains. During the security process, for example, Popovic and her colleagues observed the activities of both security personnel and passengers, and discovered a mismatch between the time allocated to the various processing activities required to get through security. Security staff spent more time in the pre-screening area, while passengers spent more time in post-screening. If the time allocation could be matched, and passengers could be assisted at the post-screening, the processing time could be reduced (Popovic et al., 2009).

When investigating how couples move through the airport at a macro level, the authors described occurrences of couples dividing up their tasks (Popovic et al., 2009). This behaviour has the potential to speed up the passenger flow for experienced travellers by dividing the necessary activities between couples, or among members of a group, so that the total time required for completing the various tasks is reduced. The approach can also identify problems in the sequence of activities that slow the processing of the passenger. These may not be perceived as significant enough for the passenger to report them to the airport through interviews/surveys of customers, and would not be revealed by time-taken measurements.

While the activity-centred approach has the potential to proactively improve the passenger experience, further work was required to understand the complete airport experience (Kraal et al., 2009; Popovic et al., 2009). This research addressed this need by observing passengers throughout their airport experience, thus filling the gap in the understanding and knowledge of the complete passenger experience at airports.

4.3 OVERVIEW OF THE DIRECTION OF THE RESEARCH

The current literature investigating passenger experience includes benchmarking (Section 3.3), interviews and questionnaire feedback (Sections 3.4 and 3.5), and time-taken studies (Section 3.7). These approaches are argued to provide an insight into what the passengers, as users of the airport, consider to be both well and poorly done. However, all these methods rely on problems becoming significant

enough to be reported by passengers, or significant enough to increase the processing time above a threshold level. Once either of these scenarios occurs, the problematic process needs further investigation to see where improvements can be made to either reduce processing time, or to increase reported satisfaction levels.

Improving the passenger experience is often focused on how to speed up passenger processing, and, in particular, on how technology can be used to facilitate this. Indeed, there is a reliance on future technology assisting with expediting passenger processing (Department of Infrastructure et al., 2008a; 2008b; Consumer Protection Group, 2009; Myant & Abraham, 2009). Self-service technology is considered by the aviation industry as a "Holy Grail" to improve the passenger experience. It is assumed that the experience will be improved by providing passengers with additional control of their experience, while also reducing the cost to the industry of processing each passenger (Transportation Research Board of the National Academies, 2008). However, there is little research to see if this extra technology will improve the experience of a passenger (Popovic et al., 2009). The focus has been on reducing the cost to the industry – a management goal. This management perspective is pervasive throughout all current measurements and is lacking a true passenger focus (Fodness & Murray, 2007). Focusing on the passenger is considered as the way forward for how airports can improve the experience (Kazda & Caves, 2000a; Caves & Pickard, 2001; Yeh & Kuo, 2003; Goetz & Graham, 2004; Fodness & Murray, 2007).

At present, there is limited research with a passenger-centred focus. One exception is the activity-centred approach (Popovic et al., 2009). The approach allows the investigation of what passengers actually do during their airport experience, and how their activities combine to illustrate passengers' movement through the complete airport experience. The main shortcomings of current approaches (synthesised from the literature review) are summarised in Table 4.1. The table also documents the way in which the activity-centred approach addresses each shortcoming.

Table 4.1: Summary of shortcomings of current understanding the airport experience and advantages of using the activity-centred approach

Current understanding of passenger expeirence	Activity-centred approach to understanding passenger expeirence
Lack of passenger-centred focus	Focuses on the passenger
Lack of whole-of-airport perspective	Can be applied to the whole airport experience
Lack of research on discretionary periods	Investigates discretionary time
Reliance on self-service technology to solve future problems	Investigates what technology passengers interact with and how they interact with this technology
Time measurements not identifying why particular domains register long processing times; no discussion of how/where to save time	Investigates the activities passengers undertake at each part of their experience
Does not adequately explain the passenger experience	Can provide a new understanding of the passenger experience

The advantages of the activity-centred approach in exploring passenger airport experience (as tabulated above) are translated into the objective of this research project. These objectives are to:

1. Focus on the passenger's airport experience
2. Understand the complete experience of the passenger
3. Understand what passengers do during discretionary periods
4. Investigate what technology passengers interact with at airports
5. Understand the activities that passengers undertake at each stage of their airport experience
6. Provide a new understanding of the passenger experience

4.4 SUMMARY

In this chapter it has been argued that the activity-centred approach is a suitable approach for investigating passenger experience at airports. The approach has provided a new perspective when it has been used to understand how passengers use the airport. For example, how passengers can be better assisted at security (Popovic et al., 2009). It also overcomes the problems that exist with the current approaches to understanding the passenger experience, such as a lack of passenger focus, and a lack of research into discretionary periods (Table 4.1).

The activity-centred approach is employed to provide a new perspective of the passenger experience, and the following chapter details the methodology used in this research and outlines the research plan and field study design. This is followed by the discussion of each field study.

Chapter 5. Research design

5.1 INTRODUCTION

Chapter 4 established that an activity-centred approach is an appropriate and novel way to investigate the experience that passengers have at airports. The chapter concluded by outlining the current issues that exist with regard to understanding the airport experience from a passenger focus, and how the activity-centred approach addresses these issues. This chapter outlines the methodology that was used in the two field studies, followed by an explanation of the individual methods and tools that were used for each field study.

5.2 RESEARCH METHODS

This section reviews the literature that has been used to shape this research, which employs an activity-centred approach. However, there has been limited research that has used this activity-centred approach to study the airport experience. Shaw (2007) used live observation to understand passenger experience at check-in, taking notes as the interaction occurred. Research by Kraal et al. (2009) and Popovic et al. (2009) into passenger experience also used observation as the main method of data collection. In contrast to Shaw (2007), Kraal et al. (2009) recorded the activities for later coding: this has the benefit of allowing much more detailed analysis than live observation. The method was used to show the various activities at security and how they were supported, or not supported, by security staff (Kraal et al., 2009). The observations in both studies – Shaw (2007) and Kraal et al. (2009) – focused on particular domains, namely security and check-in. This domain-focus is a suitable method to understand activities at specific locations. In this project, the approach is extended by exploring the full passenger experience, from the time the passengers enter the terminal building until they board their flight.

Videorecording of activities was chosen to allow a deeper understanding of the airport experience. However, observation alone does not provide sufficient information for meaningful conclusions on the context to be drawn. Thus, the project

aimed to augment the observations by also understanding the context in which the passenger carried out their various activities. A method to explore the context was also required. There are a number of methods that can be used to reveal the reasons people undertake activities. One approach is the use of concurrent protocol, which involves participants talking aloud during an activity. This approach allows people to talk about exactly what they do, as they do it (Chi, 2006). However, it was decided this approach would not be used as it requires the researcher to be close to the person being observed, and any consequent interaction between the two could impact on the experience.

Another data collection method is retrospective interviews. Retrospective interviews occur after the person under investigation has completed a task (Langdon, Lewis & Clarkson, 2007; Langdon, Lewis & Clarkson, 2009). These interviews are used to obtain information about a person's understanding of an experience. The structure of each interview needs to be identical to ensure all interviewees are treated in the same way. This consistency also reduces researcher bias. Retrospective interviews were chosen to assist in the understanding of the context of activities for this research as they limit the impact the observing researcher has on the experience of the observed passenger.

One problem associated with retrospective interviews, however, is participant recollection. As the interviews occur after the event actually occurs, recollection can be inaccurate (Pedgley, 2007) and Kuusela and Paul (2000) argue that retrospective interviews should be carried out as soon as possible after the completion of the event. Retrospective interviews in this research, therefore, took place as soon as possible after the passenger travelled, but had to wait until the passenger's trip was over. Passengers were reluctant to confirm a date for the interview when they were on holiday. To ensure consistency, the length of time between the departing flight and the interview was kept between three and four weeks. To reduce recollection problems, highlighted by Pedgley (2007), video footage was shown during the retrospective interview.

In summary, the two data collection methods used were observation augmented with retrospective interviews, as they have been shown to be the most appropriate methods to understand the full passenger experience. The two methods provided a rich and complex data set to allow the research questions to be answered.

5.3 RESEARCH QUESTIONS

The focus of this research is to identify what passengers do during their time at the airport, and to understand the context in which their activities occur. Therefore, the primary research question is:

- What do passengers do during an airport experience?

In an effort to further understand the airport experience, two sub-questions focus on the interactions passengers have at the airport, and on their use of discretionary periods (the least researched area of the airport experience). The two sub-research questions are:

- What do passengers do in between processing activities?
- What (or whom) do passengers interact with during their airport experience?

The research questions address the gap in the current knowledge of the passenger experience by investigating their complete experience in international departures. They also focus on what is important to the passenger, a focus identified by many authors to be lacking in the available research.

In response to answering these research questions, the Taxonomy of Passenger Activities (TOPA) was developed. The TOPA provides a novel understanding of the airport experience. Recommendations on how airports can support and improve the airport experience are developed from the taxonomy. Important activities are highlighted by the length of time that passengers allocate to them. Activities that increase processing time, or activities that are associated with shorter processing times, are also identified.

5.4 RESEARCH PLAN

The research plan consists of a review of the literature, followed by two field studies aimed at understanding what passengers do at an airport (Figure 5.1). The literature covering the airport experience is covered in Chapter 2, and this is followed by a review of current measures of airport experience in Chapter 3. Chapter 4 discusses how an activity-centred approach addresses gaps in the current understanding of the passenger experience.

Field Study One provides an understanding of the departures experience that passengers have at an airport, thus addressing the main research question. It also provides information on the two sub-questions; by understanding how passengers spend their discretionary periods, and what interactions occur during both processing and discretionary periods. This information determined the focus of Field Study Two, which aimed to look specifically at the processing domains and how the taxonomy groups interact. It also provided information on what could be done to improve the passenger experience. Retrospective interviews with staff members provided yet another view of the airport experience.

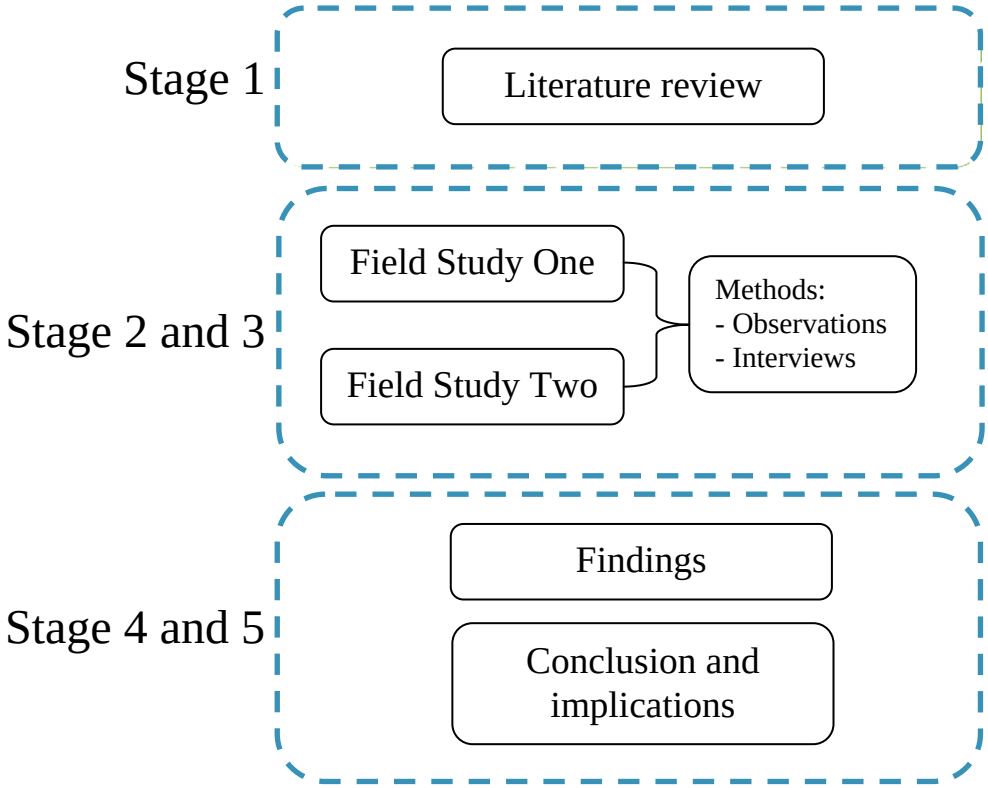

Figure 5.1: Research overview

5.4.1 Field Study One

Field Study One was designed to identify where people go in the airport, how long they spend in discretionary or processing periods, and what activities they undertake throughout the experience. This field study allowed the development of the TOPA. It also reveals what passengers interacted with throughout their airport experience. To fully understand why the passenger undertook certain activities, it was important to identify the context in which they were undertaken. These contexts

were important in developing the TOPA as it focused on the passenger through the description they provided in the retrospective interviews.

5.4.2 Field Study Two

Field Study Two employed the same two methods as Field Study One: observation augmented with retrospective interviews. Field Study Two was used to investigate the processing domains, using the taxonomic groups developed in Field Study One. It also confirmed that the data from Field Study One was accurate in identifying the activities passengers carry out in their airport experience (Section 8.3.1). Staff members at the various processing domains were interviewed after the observations. They were asked to identify the main issues passengers have at their various domains, and problems that passengers reported in Field Study One were discussed with them.

5.4.3 Field study locations

Three airports were selected to take part in the research project: Brisbane International Terminal, Melbourne International Terminal, and Gold Coast Terminal. These were selected due to their involvement in the ARC funded project, "Airports of the Future" (LP0990135). The research concentrated on the experiences of passengers who were departing through these international terminals. This allowed more investigation into discretionary time, as airlines request that international passengers arrive approximately two hours before their flight time. By comparison, departing domestic passengers are requested to arrive thirty minutes before their flight time, and so have less potential discretionary time.

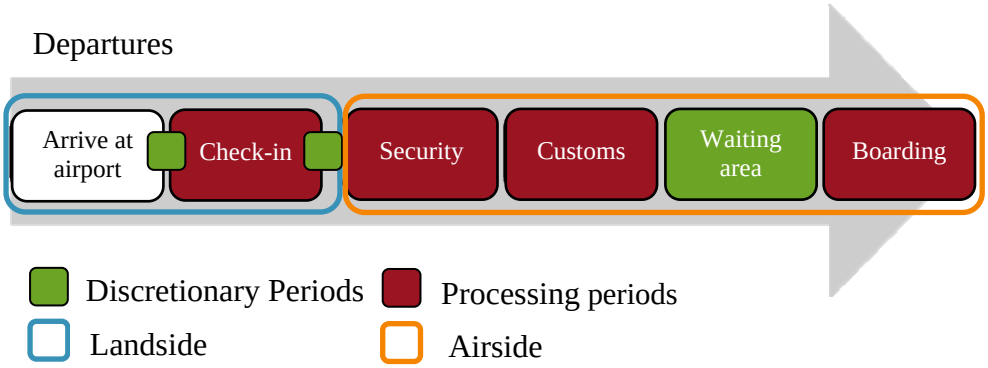

Figure 5.2: Passenger experiences investigated in this research

The departure experience was chosen for investigation as it involves only one government-controlled area – customs. International Arrivals has more government-controlled areas, and these areas have restrictions on videorecording. Thus, the arrival experience would provide much less data than the departure experience. Figure 5.2 incorporates Figure 2.3 and Figure 2.4 to illustrate the focus of the research, showing the four processing domains, the three discretionary periods and the landside/airside divide.

5.5 ANALYSIS

As described in Section 5.2, two methods were used to understand the airport experience: observation and retrospective interviews. Two software programs were chosen to allow in-depth analysis: The Observer (Noldus, 2011) and Atlas.ti (Atlas.ti, 2010).

Noldus Observer XT software (Noldus, 2011) was used to apply a coding scheme to the observational data. Noldus Observer allows the importation of video footage, and the application of the developed coding scheme to the video. The coding scheme can be developed and changed throughout the analysis. All observation coding was completed within a month of the observation, and videos were re-coded by a 'blind' researcher to ensure there was no researcher bias. Further details of research rigour can be found in Section 5.6.

Atlas.ti software (Atlas.ti, 2010) was used to code transcripts of the retrospective interviews for both field studies. All retrospective interviews were recorded on a voice recorder and the audio tracks were transcribed verbatim. The transcripts were uploaded into Atlas.ti. The coding scheme was developed from the interviews and complemented the coding scheme from the observational data. The data were quantified in Atlas.ti, and focused on the co-occurrence between specific codes. Retrospective interviews were re-coded by a 'blind' researcher to again ensure that there was no researcher bias. Further details of the research rigour can be found in Section 5.6.

5.6 CODING SCHEMES

The coding schemes were developed from four sources: (i) the research questions; (ii) passenger progress through the airport; (iii) actual observation of how

passenger activities enable their airport experience; and (iv) the literature on the airport experience. While the coding schemes used in Field Studies One and Two have the same foundation, each study has a different focus. The full coding schemes for each field study are explained and discussed in their respective chapters (Chapter 6 and 7 Field Study One; and Chapter 8 Field Study Two).

There are three levels of coding used for all data in Field Study One. They are (i) macro level coding, (ii) location coding, and (iii) activity coding. Table 5.1 illustrates these levels. The activity coding level only was used for Field Study Two.

Table 5.1: Coding scheme levels for the two field studies

Coding name	Number of codes	Used to code
Macro	2	Processing and discretionary divide
Location	18	The location of the passenger
Activity	30	The activity undertaken by the passenger

Macro level coding

All data was coded for what has been termed the "macro level" of the airport experience. This level is simply divided into "processing" and "discretionary" (Kraal et al., 2009; Popovic et al., 2009). These two levels of coding are introduced and explained in Section 2.4, and illustrated in Figure 2.4. Activities were coded as "processing" when passengers entered one of the domains associated with processing: check-in, security, or customs. Processing at these domains was location dependant. Processing was coded for boarding when the flight was called by the airline. Therefore, coding processing at boarding was not location dependant. Coding of processing in the interview transcripts occurred when a passenger or staff member discussed one of the processing domains: check-in, security, customs, or boarding.

Discretionary periods were coded in Noldus Observer once passengers had finished their processing activities. Once they left the check-in desk or walked through the security and customs area, they were coded as being in a "discretionary" period. Coding of discretionary periods in the interview transcripts occurred when a passenger discussed an activity that was not associated with processing.

Location level coding

The next level of coding was "location" and all raw data was coded at this level. The coding of locations was dependent on the airport being observed. The three processing domains were coded when a passenger entered a specific location. All three domains had physical borders at every airport, such as bollards, doors, floor markings, or a change in level. These physical borders allowed clear boundaries when coding locations. This was consistent at the three airport locations.

All the airports used in the project had at least five different types of shops; these included duty free outlets and newsagencies. In an attempt to achieve consistency, types of shops were not coded – "Shops" was the term used for all retail outlets that sold predominantly non-food. All food outlets were coded as "cafe" – the term used for all retail outlets that sold predominantly food – and all airports had at least five different food outlets. Coding of "cafe" included areas in close proximity to the cafe where passengers could sit and eat.

Coding of "seating area" referred to areas where passengers could sit but which were not associated with any retail outlets or located near a departure gate. If the seating area was near a departure gate, it was coded as "departure gate". It is important to note that passengers could be at the departure gate, but not boarding. As discussed above "boarding" only occurs when the airline calls the passenger to board their flight; this is why boarding is not coded as a location. The final code was "amenities". Coding for this started when the passenger approached the corridor leading to a toilet, and continued until they were seen leaving the same corridor. Locations were coded in the interviews when they were discussed by the passenger or staff member.

Activity level coding

The most detailed level coding of observational data was activity. Activity codes were determined by watching the video footage and coding what activities the passengers actually undertook during observation. Coding was mostly done through watching the videorecording. However, on occasion, the video camera was obscured by another person, or was prohibited; for example, at customs. Activity coding was determined by the researcher's spoken description that was recorded during the videorecording. Coding arising from the interviews was determined by the description given in the retrospective interview transcripts.

Research rigour

To ensure there was no researcher bias, 20% of the videos and 20% of the interviews were re-coded by a 'blind' researcher who had limited knowledge of the respective coding levels used. When the fourteen videos were re-coded, there was complete correspondence between the original coding and the blind re-coding for the "macro" and "location" levels. There was a slight difference in the timing of when the activities started and stopped; however, this was only a difference of seconds. The total number of times that activities were undertaken was the same. The difference between the coding and re-coding was less than 5%.

The interviews were also coded by a 'blind' researcher. There were only small differences between the blind researcher's coding and that of the original researcher. These differences were resolved by making the definitions of the coding levels clearer. Again, the difference between the two coders was less than 5%.

5.7 ETHICS AND LIMITATIONS

One perceived research limitation could have been that the experience may have been affected by passengers knowing that they were being observed. However, recording individual passengers and staff without their knowledge throughout their airport experience was not ethical. To ensure this effect was reduced, all videorecording was done at a distance of 5 to 10 meters from the passengers and staff. This had the required effect, as many passengers often commented that they forgot they were being recorded, and did not notice the researcher.

Researcher bias was another potential problem. The researcher observed the passengers, developed the coding system and then coded all the videos and interviews. This closeness to every level of the project could mean that the researcher became too involved with the project. The problem was minimised by using a 'blind' coder to recode 20% of the videos and interviews, as described in Section 5.6.

5.8 SUMMARY

This chapter has presented the overall research plan and methodology used in this research project. The research question and sub-questions addressed through two field studies were presented, and the individual study methods discussed. A brief discussion of the tools used to analyse the data were introduced. The levels of coding

that apply to both field studies and to both data collection methods (observation and retrospective interview) were introduced.

The specific methods used for each field study, along with their results are discussed in detail in Chapter 6 and Chapter 7 (Field Study One), and Chapter 8 (Field Study Two). This is then followed by a discussion of the combined results of the two studies (Chapter 9).

Chapter 6. Field Study One – methods and results

6.1 INTRODUCTION

This chapter explores Field Study One. It explains the methods used for the passenger recruitment process, the protocols for the collection of observation data, and the structure of the retrospective interviews. This is followed by the results of the study and their analysis. A discussion of this analysis follows in Chapter 7.

6.2 RESEARCH QUESTIONS

Field Study One was carried out in order to examine the main research question:

- What do passengers do during an airport experience?

It also examined the two sub-research questions:

- What do passengers do between processing activities?
- What (or whom) do passengers interact with during an airport experience?

Field Study One aimed to discover what passengers do during their whole experience at International Departures. This information, it is argued (Kazda & Caves, 2000a; Transportation Research Board of the National Academies, 2008), is necessary to improve the design and layout of airports. In particular, the study addressed the lack of research into how passengers spend their discretionary periods (Kraal et al., 2009) by cataloguing passenger activities (thus answering the first research sub-question). This allowed a list of passenger interactions to be developed (thus, answering the second sub-question).

The combined knowledge of these activities and subsequent passenger interviews allowed for an understanding of the context of the activities. Understanding the context, in turn, allowed the development of the activity taxonomy. The intention of this was to develop a list of activities that could be grouped, according to context, to provide a novel view of the airport experience.

6.3 METHODS

The methodological foundations of the two field studies in this research were discussed in Chapter 5. This section now concentrates on explaining the methodological details specific to Field Study One.

The first field study consisted of three parts: (i) recruitment of passengers, (ii) observation of the passengers, and (iii) retrospective interviews with passengers. Observations examined the passengers' activities in detail during their complete airport experience. The retrospective interviews obtained their personal descriptions of what happened during the experience. Each part of Field Study One is now explained in more detail.

6.3.1 Recruitment

Two recruitment procedures were used. The first procedure was for Brisbane Airport. Passengers were recruited through: posters placed in coffee shops around Brisbane's Central Business District and QUT's Gardens Point campus; emails; Facebook; and word-of-mouth. Although three travel agents agreed to hand out information forms when customers booked an international flight, no passengers were recruited in this manner. Once the potential recruits contacted the researcher, they were screened to ensure they would not be using the domestic terminal or an airline lounge. Passengers who used airline lounges were excluded as the researcher could not gain access to these areas. Once screened, recruits were asked to sign and return a consent form (Appendix A), and emailed detailed information of the research project (Appendix B). This consent form requested that they take part in both the observation process and the retrospective interview.

A different recruitment procedure was used at Melbourne and Gold Coast Airports. At these locations, passengers were approached as they entered the airport terminal and asked if they would be interested in taking part in the project. On agreement, these recruits were also screened to ensure they were leaving on an international flight, and not using an airline lounge. They were asked to sign a consent form (Appendix A), and were given an information form with more details of the research (Appendix B). All passengers were made aware that they could withdraw from the study at any point.

6.3.2 Observation

The observation procedure involved the researcher following a passenger at a discrete distance, while recording their activities on video camera. Only one passenger was recorded on each observation. It was important that the researcher not be approached by any airport staff during the recording. To minimise such approaches, all airport domains were informed that the researcher would be videorecording a passenger throughout their time in International Departures.

On their day of travel, Brisbane Airport passengers were greeted and briefed on the observation process. Melbourne and Gold Coast passengers were briefed on the observation process after they agreed to participate in the study. Observations began after this initial conversation with the passenger, and before the passenger entered check-in. Recording then continued throughout the airport until the passenger was processed at boarding and entered the walkway to the plane.

Two locations, customs and amenities, were excluded from direct recording. At both locations, the camera continued recording, but the passenger was not directly recorded. At customs, the passenger's activities were watched and described by the researcher, and this description was used for the activity coding. When the passenger entered the corridor to the amenities, the videorecording continued, but recorded the entrance the amenities entrance only. Videorecording continued until the passenger emerged from the entrance; direct observation then continued.

During direct observation, a distance of between ten and fifteen metres was maintained between the passenger and the researcher. This distance reduced to between two and five metres when a passenger entered certain retail locations. The reduction in distance was to facilitate the direct observation, which could sometimes be impeded by the various retail displays.

6.3.3 Retrospective interview

Passengers were contacted three weeks after their departure date to arrange the retrospective interview. They were informed they would need to have access to a computer for this interview, as they would be asked to watch a number of video clips of their experience and then answer questions on them. The clips used in the interview were chosen during coding.

Once the passenger confirmed a time for the interview, the video clips were uploaded to a secure area of YouTube. YouTube was chosen as it is the most accessible and commonly used internet site for viewing videos, and can be used throughout the world. It also provides a secure area where videos can be uploaded, and access restricted to the researcher and the interviewee. All interviews took place by phone, or Skype. If passengers did not return to Australia, interviews were via Skype, while they were overseas. To ensure consistency, a script was used for the interview (Appendix C). Passengers never saw this script.

On the day of the interview, the passenger was sent an email with the links to the various clips on YouTube (Appendix D). Passengers were called at the specified time and were thanked for taking part in the retrospective interview. They were then asked to open each clip and describe what occurred in the clip. Interviews were recorded on a voice recorder for later transcription.

6.3.4 Participants

A total of seventy-one passengers were recruited for Field Study One. Twenty passengers were observed departing from Gold Coast Airport, twenty from Melbourne Airport, and thirty-one from Brisbane Airport. Of these seventy-one passengers, forty-six took part in the retrospective interviews. There were various passenger departure times; however, all were between 8:40am to 2:30am. Destinations included Europe, North America, Asia, and New Zealand. Passengers were asked for their reason for travel and this information confirmed that the sample of passengers used was representative of the general population leaving Australia on International flights.

6.4 ANALYSIS

This section describes the data analysis techniques used for each part of Field Study One. The coding scheme specific to Field Study One is also explained.

One researcher coded all data in Field Study One. Coding of the observational data occurred first, and had to occur within 3 weeks of the observation. This timeframe was required to ensure that video clips were ready for the retrospective interview. After the interview, the researcher double-checked the coding to see if it differed from the description given by the passenger; if this was the case, the video was re-coded to match the passenger's description of the occurrence. To ensure

rigour, a ‘blind’ researcher was used to check the coding (as explained in Section 5.6).

6.4.1 Observation analysis

The data collected during the observation was coded using Noldus Observer software (Noldus, 2011). The coding scheme was developed using three levels of coding: (i) macro, (ii) location, and (iii) activity (Section 5.6). Each level was coded simultaneously as passengers went through the various periods in their airport experience (Figure 5.2). Any activity the passenger undertook, or any location the passenger visited, was coded throughout the whole experience.

Activity level coding was dependent on activities the passengers actually undertook during their experience. Over eleven thousand activities were observed and were categorised into twenty-nine activity groups. These activity groups can be found in Table 6.1. Further details on how these activities are defined can be found in Appendix E. All activity lists will be presented in this format and are presented from the most frequent at the top left of the table, reducing in frequency from left to right (as in text reading mode). In Table 6.1 the most frequent activity was “interacting with staff”, the second most frequent activity was “interacting with group” and the least frequent activity was “queuing”.

Table 6.1: List of observed passenger activities in Field Study One

Activity list		
Interacting with staff	Interacting with group	Interacting with non-group
Interacting with own technology	Interacting with airport technology	Repacking
Unpacking	Reading/writing	Eating/drinking
Browsing	Purchasing	Lying/sleeping
Sitting	Walking/standing	Walking without luggage
Walking with luggage	Walking with pram	Walking with trolley
Being scanned	Filling out OPC	Undergoing random (extra) security check
Activating security scanner	Checking signage	Checking flight information
Using water fountain	Smoking	Saying goodbyes
Grooming	Queuing	

Coding of activities occurred as passengers moved through the airport. For example, during the actual airport experience, a passenger would enter check-in, and wait in line to be served by a member of staff. Once the passenger reached the front of the queue, they would then speak to a member of staff to be checked on their flight. This would be coded in Noldus Observer as “queuing”, followed by “walking with luggage” as the passenger moved from the queue to the staff member. When the passenger spoke to the member of staff, this was coded as “interacting with staff”.

Noldus Observer allows data to be captured both visually and quantitatively. Visual data is presented as Observer maps (see Figure 6.6 for an example), and is used throughout the results (Section 6.5). Quantitative data was analysed in two categories:

- average time spent undertaking activities
- average percentage of total airport time spent undertaking activities

When data is presented as an average time, the average was calculated using the number of passengers who were coded as undertaking the activity. The number of passengers is presented as “*n=x*”. When data is presented as the average

percentage of total time spent undertaking activities, the average is calculated using all passengers (*n=71).*

6.4.2 Retrospective interview analysis

All interviews were transcribed and coded using Atlas.ti software. The coding scheme was developed using six levels of coding. The three coding levels – "macro", "location" and "activity" – were used in the observation coding (discussed in Section 5.6). As coding was dependant on what the passenger discussed during their interview some locations and activities were not used in the interview coding. For example, passengers never discussed unpacking or repacking their bags even though this activity was observed to be regularly undertaken. Thus, these activities were not coded in the retrospective interviews; the activities that were coded can be seen in Table 6.2.

Two activities had to be split for the coding: for example, queuing had to be split into "queuing" and "not queuing". This was because some passengers mentioned that they did not have to queue. It is not possible to code "not queuing" during the observation, as "not queuing" cannot be considered as passenger activity.

The other activity that had to be split was purchasing. There were four types of purchasing activity discussed. The first type was a "pre-planned specific purchase", where passengers mentioned that they had planned to buy a specific item before arriving at the airport. The second type was a "pre-planned non-specific purchase", where the passenger discussed that they wanted to buy something but had not yet decided what to buy (for example, a present for someone). The third type was an "impulse purchase", which passengers had not yet planned before getting to the airport. The fourth type of purchase coded was "no purchase", where passenger said that they had planned to buy something but then did not.

Table 6.2: List of passenger activities discussed in retrospective interviews

Activity list		
Interaction with staff	Interaction with group	Interaction with airport technology
Interaction with own technology	Queuing	Not queuing
Waiting	Filling out OPC	Pre-planned specific purchase
Pre-planned non-specific purchase	Impulse purchase	No purchase
Sitting	Waiting/standing	Walking without luggage

Three other coding levels were required to code the interviews: “Customer service”, “experience comment” and “reasons for activities” (Appendix F). Customer service was coded either “good” or “bad”. Experience comment was coded either as “positive”, “negative” or “neutral”. These two coding levels differ in focus: “experience comment” refers to the overall experience that a passenger discussed, while “customer service” refers to an interaction with a member of staff.

The third level, “reasons for activities”, focused on the reasons a passenger gave for undertaking a particular activity. The codes (which can be found in Appendix F) include “tactic”, “improvements” and “unexpected occurrence”. Tactics were coded when passengers discussed an activity they carry out to control their experience, such as avoiding queuing. Improvements were coded when a passenger referred to a part of the airport that they said could be improved. Unexpected occurrences were coded when the passenger mentioned something in the airport they were not expecting to occur.

6.5 RESULTS

This section describes the results from the Field Study One observations and retrospective interviews at the three international airports. Results pertaining to the main research question, which addresses the complete passenger airport experience – What do passengers do at airports? – are first discussed. This is followed by a discussion of each discretionary period and processing domain as they were

encountered by the passengers (Figure 5.2). Each discretionary period and processing domain integrates the observation results and the retrospective interviews. The section then concludes with the results of the exploration of the two sub-research questions.

6.5.1 What passengers do during an airport experience

On average, passengers spent 1 hour 51 minutes at the airport, with individual times ranging from 44 minutes to 5 hours 2 minutes. The total time spent in the airport, referred to as "dwell-time" (Section 2.4), varied among the three airports (Figure 6.1).

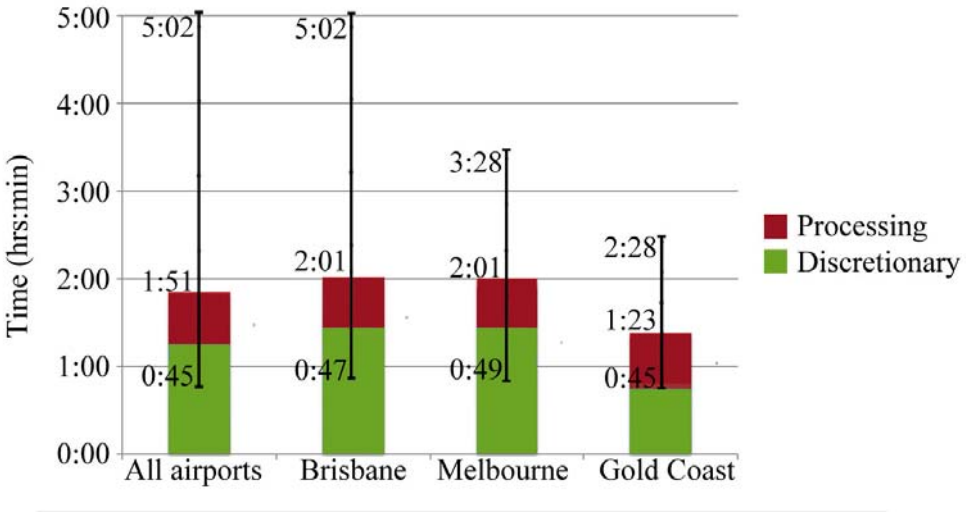

Figure 6.1: Average dwell-times for all airports, and for individual airports

Both Brisbane and Melbourne Airports had approximately the same dwell-time, while passengers at Gold Coast Airport had shorter dwell-times. Brisbane Airport had the greatest maximum dwell-time, due to a delay in one passenger's flight.

Table 6.3 shows the percentage of time that passengers spent in processing and discretionary periods. On average, passengers spent 36% of their dwell-time undertaking processing activities, and 64% undertaking discretionary activities. Passengers at Brisbane and Melbourne Airports were able to spend a greater percentage of their time undertaking discretionary activities compared to Gold Coast Airport. At both Brisbane and Melbourne, discretionary activities took up close to 70% of the dwell-time. While Gold Coast passengers had a greater percentage of dwell-time devoted to processing than Brisbane and Melbourne Airports, the actual

amount of time passengers spent being processed was similar in all cases: on average, 35 minutes at Brisbane Airport, 35 minutes at Melbourne Airport, and 38 minutes at Gold Coast Airport.

Table 6.3: Percentage of time allocated to processing and discretionary periods for all airports and individual airports

	All Airports (%)	**Brisbane (%)**	**Melbourne (%)**	**Gold Coast (%)**
Processing	36	32	31	46
Discretionary	64	68	69	54
n=	71	31	20	20

There was a wide range in the total time passengers spent being processed – from only 7 minutes to 1 hour 15 minutes. Ten passengers (Passengers 18, 23, 24, 34, 54, 55, 58, 61, 66, and 69) had over half their dwell-time taken up with processing activities. By considering the activity profile of these ten passengers it is possible to identify the domain, or domains, that took up the most time. This will be considered in the next section and Figure 6.2.

The overall processing and discretionary results are now considered. This is then followed by the results for each processing and discretionary period of the passenger experience (Figure 5.2). This, in turn, allows for an in-depth understanding of the passenger experience, the activities they undertook, and further exploration of the differences in processing times.

Processing Periods

The time that passengers could allocate to discretionary activities was determined by how long their processing activities took. As the time taken for passengers to pass through each domain is used as an efficiency measurement at airports, an understanding of what happens during processing domains is important for results to be relatable to airport management.

Passengers spent the greatest amount of processing time at check-in (Figure 6.2). Of the seventy-one passengers observed, fifty spent the greatest amount of time at check-in. The average time spent in this domain was 17 minutes, with individual times ranging from 2 minutes to 54 minutes. Passengers spent, on average, between 6

and 7 minutes at security, customs and boarding domains. However, boarding recorded the greatest range of times: from less than 1 minute to nearly 57 minutes.

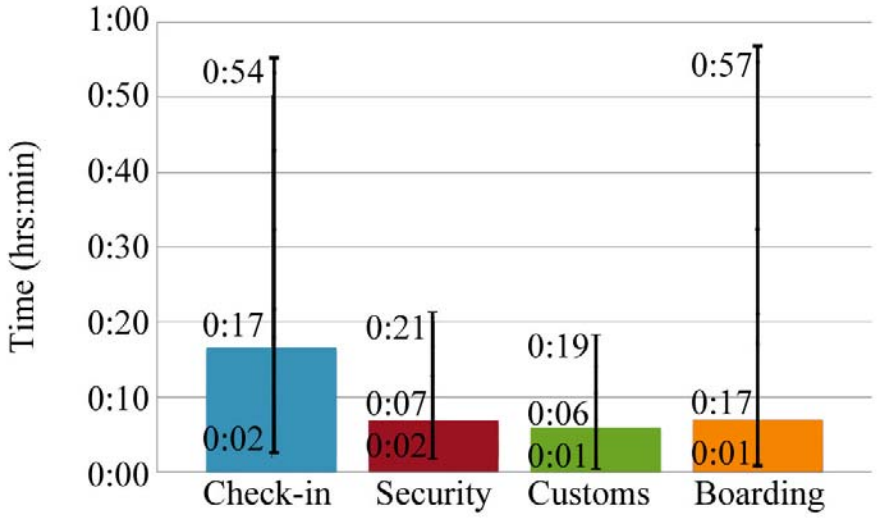

Figure 6.2: Average processing time spent at each domain for all airports, and for each individual airport

Table 6.4 shows the percentage of dwell-time passengers spent at each domain for all airports, and for each airport separately. The percentage of time taken at check-in and security were similar across all airports. However, the results indicate that Gold Coast passengers took a longer percentage of dwell-time at customs and boarding.

Table 6.4: Percentage of dwell-time at processing domains for all and individual airports

	All airports (%)	**Brisbane (%)**	**Melbourne (%)**	**Gold Coast (%)**
Check-in	16	15	15	18
Security	7	7	5	8
Customs	6	4	5	10
Boarding	7	4	6	12
n=	71	31	20	20

Figure 6.3 shows the ten passengers (cited above) who had over 50% of their dwell-time taken up with processing activities. In seven of the ten cases (Passengers 18, 23, 24, 34, 54, 55, and 58) check-in accounted for most of the processing time. Overall, check-in took the greatest percentage of processing time for fifty-six out of

the seventy-one passengers, or 78%. The activities undertaken by passengers that account for their long processing time at check-in are discussed in Section 6.5.2.

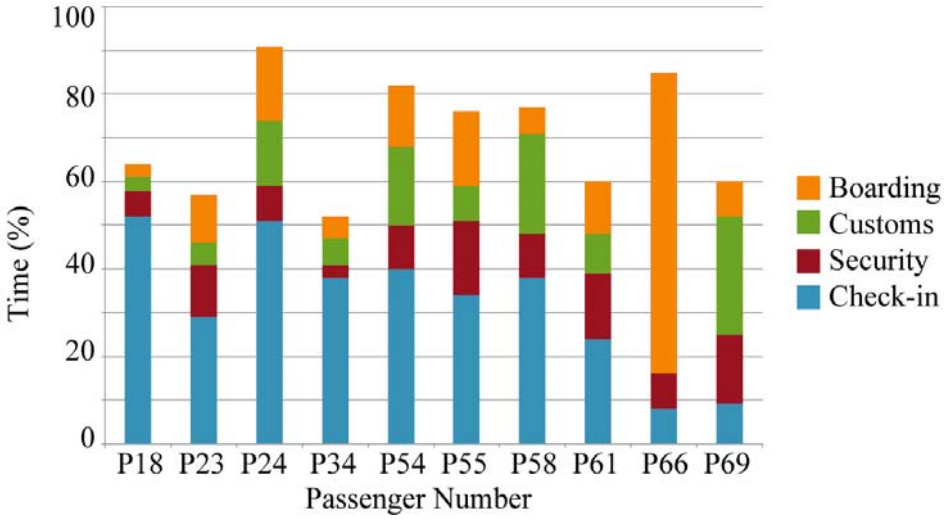

Figure 6.3: Percentage of time spent at each domain for passengers recording a 50% processing time

Each processing domain is very different in terms of what passengers need to accomplish and, therefore, in terms of the activities they need to undertake. For this reason the activities observed and the interview results are considered for each processing domain.

Discretionary Periods

Discretionary periods were observed at three separate times (Figure 5.2). There were many locations visited during the three discretionary periods seen in Table 6.5.

Table 6.5: Locations visited by passengers during their discretionary time

Location	**Shops**	**Cafe**	**Departure gate**	**Amenities**	**Currency Exchange**	**Seating area**	**Other**
***n*=**	68	57	53	40	17	15	16

The most commonly visited locations were the shops, with sixty-eight passengers visiting one or more of the shops. The second most commonly visited locations were the cafes. Every passenger observed visited at least one retail outlet at the airport, however, not all passengers made a purchase. The third most commonly visited location during the discretionary periods was the departure gate; fifty-three passengers chose to go to the departure gate area during their discretionary time. Fifty-two of these went to the departure gate their flight, while one sat at a different

departure gate and only went to their flight's departure gate after it was called. The other locations visited are detailed in Table 6.5.

There was a range of activities that passengers undertook during their discretionary periods. The twenty-nine activities to which passengers allocated the most time are listed in descending order of frequency (from top left to bottom right) in Table 6.6.

Table 6.6: Activities undertaken by passengers during the discretionary periods

Activity list		
Interacting with group	Interacting with own technology	Walking without luggage
Eating/drinking	Visiting restroom	Browsing
Reading/ writing	Filling out OPC	Queuing
Walking with trolley	Interacting with staff	Interacting with airport technology
Interacting with non-group	Saying goodbye/ hugging	Repacking
Walking with luggage	Walking with pram	Sitting
Unpacking	Waiting/ standing	Checking flight information
Purchasing	Lying/sleeping	Using water fountain
Being scanned	Activating scanner	Grooming
Checking signage	Smoking	

The activity that occupied most passengers' time was interacting with their own group; however, some were travelling alone and so could not undertake this activity. Passengers spent the second largest amount of time interacting with their own technology, and the third largest amount of time walking without luggage. These activities are described in more detail for each discretionary period in Section 6.5.2.

Browsing and purchasing were activities undertaken by every passenger at every airport. The results of how passengers planned their purchases were not able to be divided between the three discretionary periods, therefore, the results will be discussed at this point. Four types of purchases were described by passengers, and

are described in Section 6.4.2. Figure 6.4 provides an example of how a passenger described a "pre-planned non-specific" purchase.

> *"We hadn't planned but we were sort of on the lookout for one or two things, Apple products. It seemed liked a pretty good deal, so."*

Figure 6.4: Passenger discussing "pre-planned non-specific" purchase

Most purchases during a passenger experience were planned specific purchases. Of the eighty-seven purchases discussed by the passengers, forty-one were "planned specific", and twenty were "planned non-specific" purchases, and twenty-six purchases were "impulsive" (Table 6.7). Passengers planned 70% of their purchases during their experience, and only purchased 30% of the purchase on impulse.

Table 6.7: Number and percentage of passengers' "planned" and "impulsive" purchases

	Planned specific	**Planned non-specific**	**Impulsive**
No. of purchases	41	20	26
% of purchases	47%	23%	30%

6.5.2 The activity-centred airport experience

Results from both the overall processing and discretionary periods have been covered. Results are now individually discussed for each discretionary period and processing domain encountered. The results of each discretionary period answer the first research sub-question: What do passengers do in between processing activities? The results from the interactions the passengers' undertake during the discretionary periods and processing domains answer the second sub-question: What do passengers interact with at an airport?

Pre-check-in discretionary period

Passengers' first discretionary period occurs between entering the terminal building and entering the check-in domain. While observed passengers collectively undertook seventeen pre-check-in activities here (Table 6.8), only sixteen of the seventy-one passengers undertook theses activities. Pre-check-in discretionary activities were only observed at Melbourne and Brisbane Airports. At Gold Coast Airport, all observed passengers made their way directly to check-in.

Table 6.8: Passengers activities during the pre-check-in discretionary period

Activity list		
Interacting with group members	Walking with luggage	Repacking
Checking flight information	Unpacking	Waiting/standing
Interacting with staff	Walking without luggage	Walking with trolley
Interacting with own technology	Reading/writing	Queuing
Browsing	Eating/drinking	Sitting
Purchasing	Smoking	

Twelve of the sixteen passengers who undertook pre-check-in activities did so for less than 4 minutes. Two of the four passengers who spent more than 4 minutes sat near check-in and said that they were waiting for their group to reform. The context given for this activity was attributed to the social reason of group re-formation. One passenger spent the time repacking his luggage at the entrance to the check-in queue, and explained that he did this to prepare for check-in (Figure 6.5).

> *"I think I was getting something out of my bag before check-in. It would have been something I forgot like an important travel document."*

Figure 6.5: Passenger discussing a preparatory context at check-in

The last of the four passengers (Passenger 1) spent the longest time (24 minutes) undertaking pre-check-in discretionary activities; these activities included purchasing, sitting, and interacting with a group member. This passenger also queued at check-in before the check-in opened, thus, allocating some of his discretionary time to an activity normally associated with processing. This activity profile is illustrated in Figure 6.6.

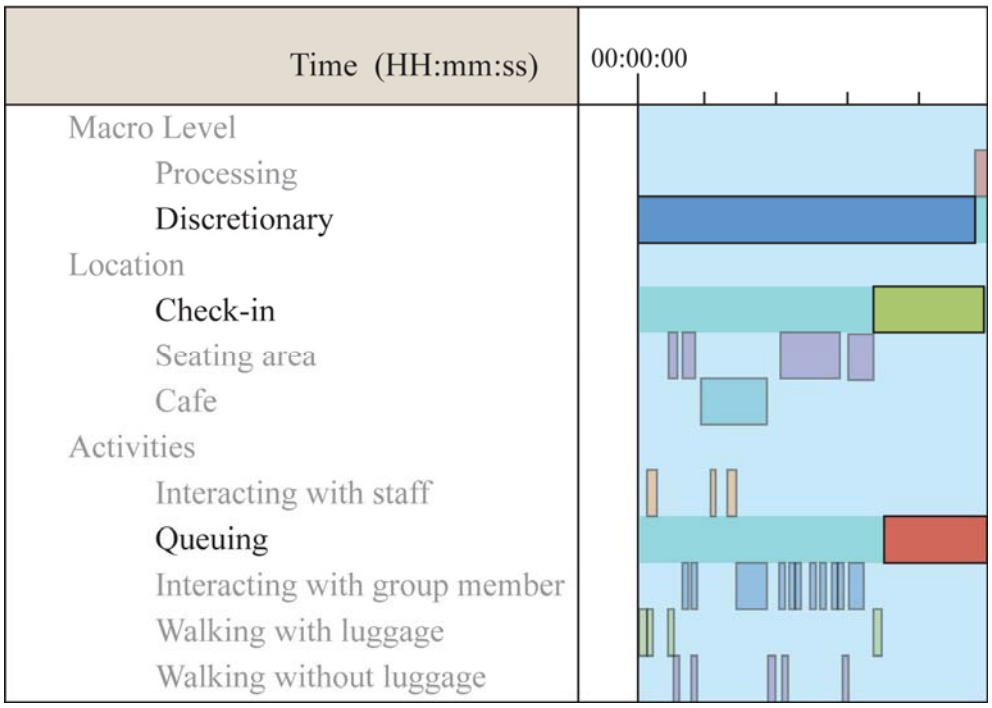

Figure 6.6: Activity profile of a passenger using a discretionary period to queue for check-in

When the passenger was asked why he chose these activities, he gave both social and preparatory reasons. The social reasons were to spend time with group members and to wait for others in the group; the preparatory reason was to ensure his oversized bags were checked-in.

Once passengers completed all their activities they moved to check-in. The results of check-in are now considered.

Check-in

Check-in activities that passengers undertook can be seen in Table 6.9. Passengers spent most time queuing, which sometimes accounted for as much as 96% of the time spent at check-in. Interacting with staff took the second largest amount of time, and interacting with group members, the third largest.

Table 6.9: Activities undertaken by passengers during the check-in process

Activity list		
Queuing	Interacting with staff	Interacting with group member
Filling out OPC	Walking with luggage	Unpacking
Repacking	Waiting/standing	Reading/writing
Interacting with own technology	Walking with trolley	Walking without luggage
Interacting with non-group	Interacting with airport technology	Sitting

Seven passengers (Passengers 18, 23, 24, 34, 54, 55, and 58), who had over half their dwell-time taken up with processing activities, are discussed earlier in Section 6.5.1. The investigation of these activities showed that these passengers spent most of their time queuing. This is illustrated in Figure 6.7, which shows the percentage of time spent queuing compared to all other activities. Passenger 23 spent 70% of her time at check-in queuing – the minimum percentage time allocated to this activity. Passenger 24 spent 94% – the maximum percentage time allocated to this activity.

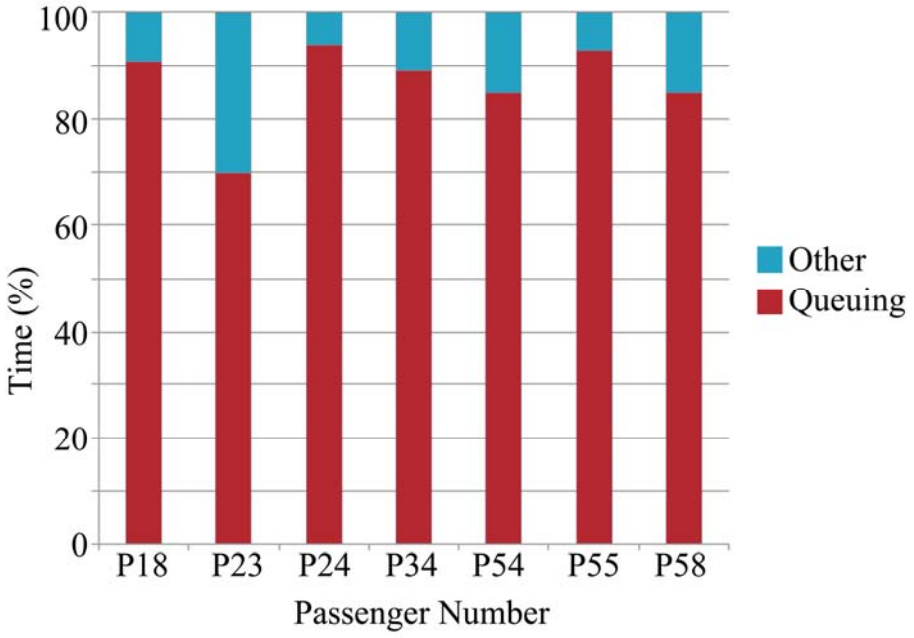

Figure 6.7: Percentage of time allocated to queuing compared to other check-in activities

Five passengers were observed filling out their Outgoing Passenger Card (OPC) at check-in; either while queuing, or while standing at the desk waiting for the staff member to check them in (Figure 6.8). Passengers described these activities as preparing for customs – a later domain in their airport experience. When asked how they knew to fill out this document, they provided three explanations: (i) they were informed by the check-in staff; (ii) they knew to do it from previous experience; and (iii) they were told by a member of their group.

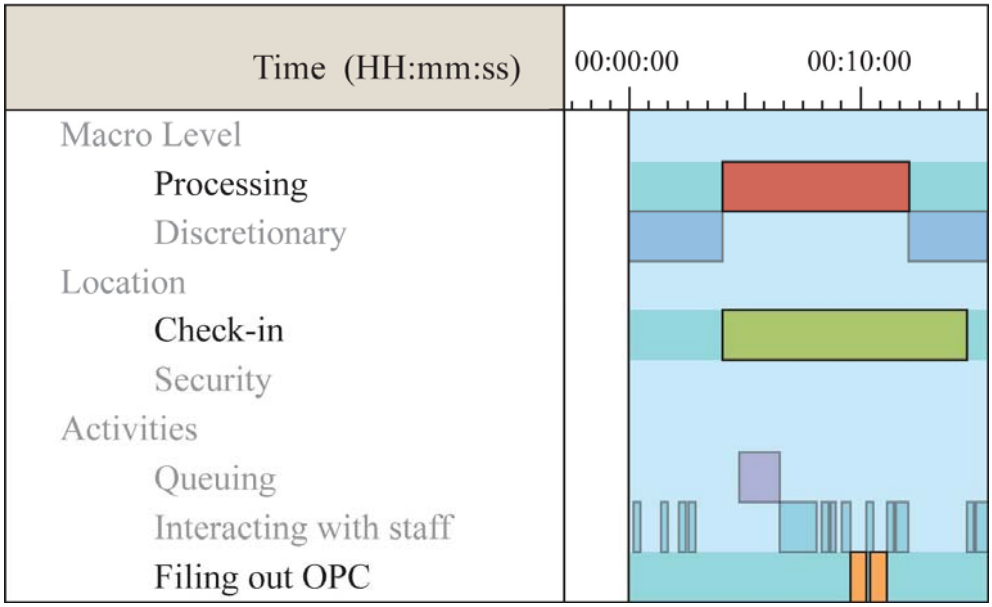

Figure 6.8: Activity profile of a passenger filling out their OPC at check-in

An activity that was only once observed at check-in was interacting with airport technology. This sole interaction occurred when Passenger 36 had to reweigh her luggage at check-in as it was over the allowable luggage weight. This passenger used the airline scales to weigh her luggage, an activity normally undertaken by the check-in staff when they take a passenger's luggage. There are currently no self-service facilities for check-in processing at the international departures at any of the international airports used in this study.

Check-in attracted both positive and negative comments in the retrospective interviews. The positive comments were all associated with:

- The straight forward process/ they were prepared for the process (n=19)
- Small queues or the lack of queues (n=3)

The smaller incidence of negative comments was associated with:

- The lack of control/they were unprepared for the process (n=6)
- The length of time taken (n=3)

Passengers discussed a number of problems concerned with their check-in experience. Negative comments were mainly associated with the passenger being unprepared for the interaction with the member of staff, or something happened that they were not expecting. For example one passenger, who had an American passport, had a problem with their electronic Australian visa. In the three cases where passengers discussed the length of time, they had spent over thirty minutes either queuing or being processed. These problems were discussed with staff members during Field Study Two (Section 8.5.1).

Once through check-in, there was a choice to either continue with the processing stages, or to remain landside and undertake discretionary activities. This post-check-in landside discretionary period is now considered.

Post-check-in Landside Discretionary period

Landside discretionary activities were observed for all passengers after check-in. Activities ranged from walking directly from check-in to security, to spending over one hour landside. Passengers spent, on average, 19 minutes undertaking post-check-in landside discretionary activities, with individual times ranging from under 1 minute to 1 hour 5 minutes. Fifty-two passengers chose to spend some discretionary time landside before proceeding with the next processing stage, while nineteen went straight to the next stage of processing.

The locations that were visited landside are found in Table 6.10. The most commonly visited location was the shops, with twenty-eight passengers visiting one or more of these. Twenty-seven passengers visited cafes, and the third most commonly visited landside location was the amenities.

Table 6.10: Locations visited by passengers during their post-check-in landside period

Location	**Shops**	**Cafe**	**Amenities**	**Currency Exchange**	**Seating area**	**Bar**	**Domestic Terminal**	**Other**
n=	*28*	*27*	*15*	*10*	*8*	*1*	*1*	*2*

There were differences among the three airports in locations visited. At Brisbane Airport more passengers visited the food outlets than the shops. Passengers

at Melbourne Airport visited the shops more than the cafes, and at Gold Coast an equal numbers of passengers visited both shops and cafes (Table 6.11).

Table 6.11: Numbers of passengers visiting shops and/or cafes during the landside discretionary period

	Shops	**Cafes**
Brisbane	5	13
Melbourne	13	4
Gold Coast	10	10

There was a range of activities that passengers undertook during their landside discretionary time. The twenty-five activities can be seen in Table 6.12.

Table 6.12: Activities undertaken by passengers during the post-check-in landside discretionary period

Activity list		
Interacting with group	Eating/drinking	Walking without luggage
Visiting restroom	Interacting with own technology	Browsing
Reading/ writing	Filling out OPC	Queuing
Walking with trolley	Interacting with staff	Interacting with airport technology
Saying goodbye/ hugging	Repacking	Walking with pram
Sitting	Unpacking	Waiting/ standing
Checking flight information	Purchasing	Grooming
Interacting with non-group	Checking signage	Being scanned
Activating scanner		

The activity that passengers spent most time doing was interacting with their own group. The second most common activity was eating and drinking, while the third most common activity walking without luggage. The last two activities (being scanned and activating the scanner) were only observed on one occasion, with Passenger 47 at the security domain in the Melbourne Airport domestic terminal, which they had entered by mistake (Figure 6.9). The passenger had to return to the

international terminal area and then complete the international security and customs process domains. These activities (being scanned and activating the scanner) were not observed at the other two airports as passengers did not have the option of going through a separate security area.

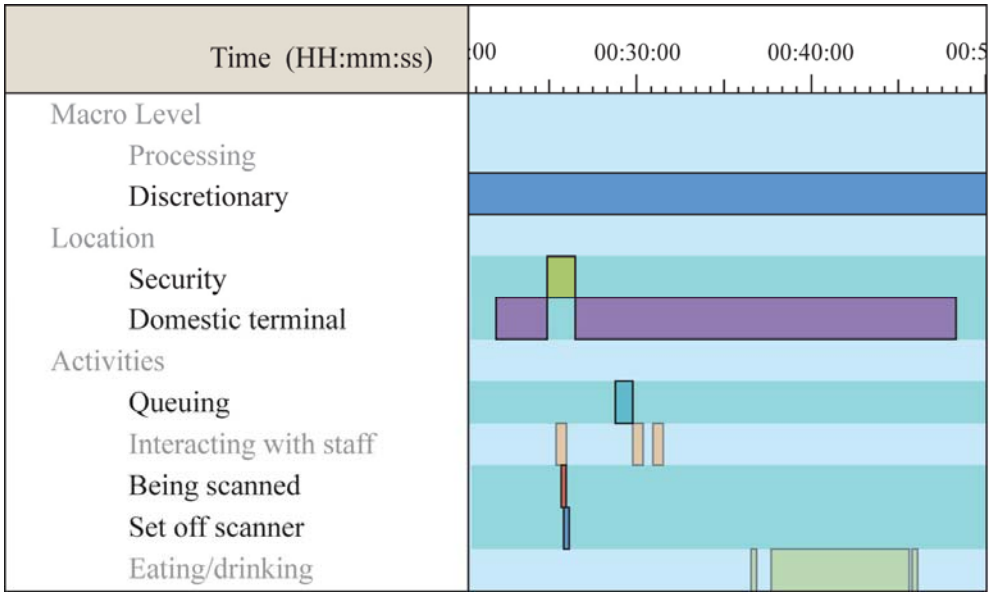

Figure 6.9: Activity profile of a passenger who mistakenly entered domestic security

There were six main landside discretionary passenger activities after check-in; these were:

- Filling out OPC (n=12)
- Eating/drinking (n=9)
- Browsing shops (n=7)
- Spending time with those who were there to farewell (n=4)
- Using amenities (n=3)
- Checking emails/playing games (n=2)

These activities described by passengers were associated with four contexts: preparatory activities for upcoming processing steps (filling out the OPC, in particular, was a preparation activity discussed by many [Figure 6.10]); consumptive activities associated with shopping and purchasing (including browsing items, visiting cafes and shops, and purchasing various products); social activities (for

example, chatting with group members to "kill time" [Figure 6.11]); and finally, entertainment activities (checking emails, playing games, or reading).

> *"We travel quite regularly so we know....we usually stop and fill [the OPC] out when we are having a coffee, before we go through customs."*

Figure 6.10: Passenger discussing preparatory context to her activities

> *"Just hung round there, killing time, so that they can spend time with him, until everybody was ready to go through customs."*

Figure 6.11: Passenger discussing social context to her activities

Passengers were seen interacting with airport technology on the landside, however, all interactions were with EFTPOS machines to purchase items at cafes or shops and were associated with consumptive activities. This technology was owned by the airport, but had nothing to do with passenger processing.

Once passengers decide that they have finished their landside discretionary activities, they then move to the next compulsory processing domains of security and customs. This is also the point at which they must leave any non- travellers, referred to as wavers, who have come to farewell them.

Security

Nineteen activities were observed at security and can be seen in Table 6.13. The activity that passengers spent most time undertaking was queuing. Queuing could take up as much as 81% of the time spent in security. The other main activities were: walking through security; repacking; and waiting/standing. Waiting/standing was observed when a passenger had passed through the security process and was waiting for their personal items to come through the x-ray, or was waiting for group members to complete the security process. In the retrospective interviews, passengers only discussed four activities when discussing security: queuing, no queuing, interacting with staff, and filling out their OPC.

Table 6.13: Activities undertaken by passengers during the security process

Activity list		
Queuing	Walking without luggage	Repacking
Waiting/standing	Interacting with staff	Unpacking
Interacting with group	Random extra security check	Filling out OPC
Interacting own technology	Eating/drinking	Reading/writing
Activating scanner	Being scanned	Interacting with airport technology
Saying goodbye	Interacting with non-group	Sitting
Walking with trolley		

Activities were observed to fall into two main contexts. They either occurred during processing, or before processing began. The activities passengers undertook before processing began included unpacking before being scanned or finishing drinks. Undertaking these activities before getting to the scanner meant that they, and other passengers, would not be held up at the processing point. These activities can be considered preparatory activities.

All passengers passed through security, and only seven had to return because they had activated the scanner. Judging by the observations, these passengers failed to get through security because they failed to remove the correct items from their hand luggage or person. Those who failed to get through security the first time were asked why they failed to do so; however, no one could remember. The passengers did discuss the fact that the rules governing what is and is not allowed through security change regularly. An example of how passengers described the confusion with rules can be seen in Figure 6.12.

> *"But I was a bit confused with the whole bottles of formula and stuff. I know the security rules are, you know, quite tight after this whole 9/11 thing. You can't take liquids through and I had a, the bottle was um, filled with boiled water, in preparation to mix up the formula and I wasn't quite sure if that was going to get rejected or not."*

Figure 6.12: Passenger discussing confusion about security rules

Passengers were observed interacting with airport technology in security. As they entered the security location, a small set of scales was available for passenger to make sure their hand luggage was under the allocated weight. Three passengers were seen to undertake this interaction at Melbourne Airport. Scales were available at Brisbane and Gold Coast Airports, but no passengers were observed using them.

Security attracted a high number of positive comments. There were three main reasons for the positive comments:

- The straight forward process/ they were prepared for the process (n=21)
- Fast processing (n=4)
- No extra checks (n=1)

Security attracted a smaller number of negative comments, which were associated with:

- The lack of control/they were unprepared for the process (n=7)

Problems that passengers encountered were discussed with security staff in the interviews conducted in Field Study Two (Section 8.5.2). Once through security the passengers proceeded through to customs. The results of the customs domain are now considered.

Customs

Passengers undertook eight activities while at customs (Table 6.14). The activity that passengers spent most time undertaking was queuing, which could take up as much as 98% of the time spent in customs. This high percentage of time allocated to queuing was due to the short interaction that occurs between customs staff members and passengers when being processed.

Table 6.14: Activities undertaken by passengers during the customs process

Activity list		
Queuing	Filling out OPC	Interacting with staff
Waiting/standing	Walking without luggage	Repacking
Unpacking	Interacting with group	

The context in which passenger activities occurred was mainly associated with preparing for interacting with a customs staff member; for example, by checking OPCs and passports, or interacting with their group. When passengers were unaccompanied, activities involved passively standing and waiting in the queue, or discreetly interacting with their own technology.

There was limited discussion of the activities associated with customs during the retrospective interviews, as video clips could not be shown. The activity that was discussed most by passengers was filling out their OPC. As discussed in the previous section, if activities happened before getting to the processing domain, passengers got through more quickly. Four passengers were observed being sent back from a customs desk to complete the OPC. This was observed at Melbourne *(n=1)* and Gold Coast airports *(n=3)*.

The mean time taken for passengers who failed to fill out their OPC before going up to a customs desk was 10 minutes, ranging from 4 minutes to 18 minutes. Figure 6.13 illustrates why failing to fill out the OPC increased the processing time: the passenger initially queued for a short time, then interacted with the staff member, and was then sent back to complete her OPC. If the passenger had already completed the OPC, she would have got through in less than 2 minutes; instead, the whole experience took over 10 minutes, and included two periods of queuing.

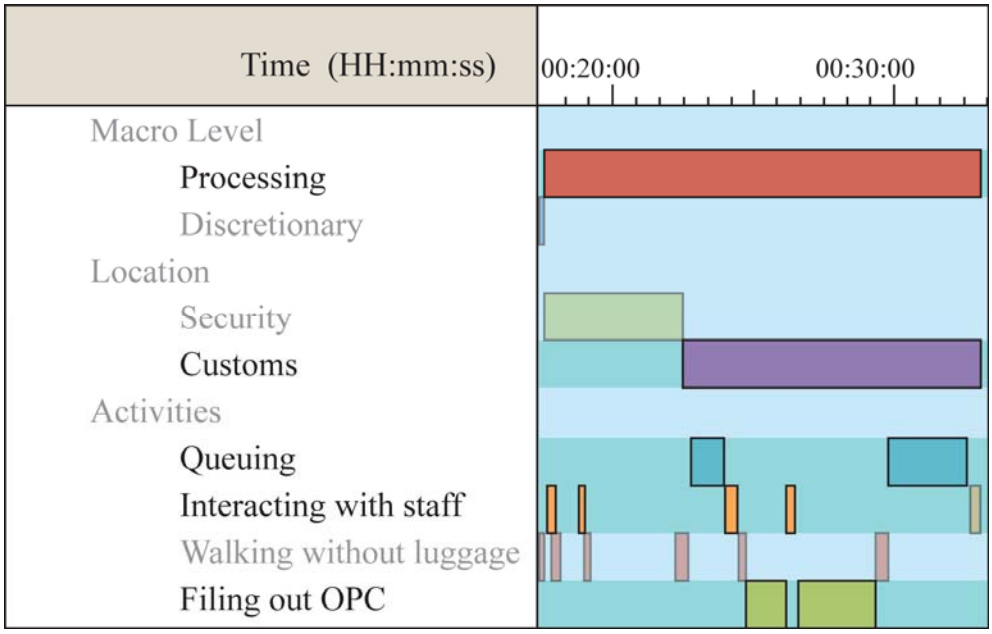

Figure 6.13: Activity profile of passenger at customs being sent back to complete her OPC

All passengers who used Brisbane International Airport had their OPC completed before entering security. When passengers were asked how they knew to complete the OPC, they cited three sources of information: (i) previous knowledge of the customs process, (ii) being given the information by an accompanying traveller, or (iii) being informed by a staff member at check-in, security or customs.

Customs attracted no negative comments. It did, however, have positive comments associated with it. Again, as for check-in and security, this was related to the passengers' perception of the process being straight forward, and that they were prepared for the process.

Once through customs, passengers are held airside and are not able to return to the landside, unless there are exceptional circumstances. The airside discretionary period is considered next.

Airside discretionary

The airside discretionary period begins when passengers leave customs. This discretionary period should be available to all passengers. On average passengers spent 56 minutes in the airside discretionary period, ranging from no time at all to 4 hours. Three passengers did not have any airside discretionary time, as their flight was called for boarding before they got through the previous processing domains. All of these passengers were flying from Gold Coast Airport.

Airside locations that were visited are shown in Table 6.15. The most commonly visited location was the shops, with sixty-three passengers visiting one or more of the shops airside. The second most commonly visited location was the departure gate, which fifty-three passengers visited during their airside discretionary period. The third most commonly visited location on the airside was the amenities.

Table 6.15: Locations visited by passengers during the airside discretionary period

Location	**Shops**	**Departure Gate**	**Amenities**	**Cafe**	**Currency Exchange**	**Seating area**	**Tax Return**	**Other**
n=	*63*	*53*	*45*	*37*	*9*	*7*	*6*	*11*

There was no difference among the three airports on the locations visited. At all airports, more passengers visited the shops than the cafes (Table 6.16).

Table 6.16: Number of passengers visiting shops and/or cafes during the airside discretionary period

	Shops	Cafes
Brisbane	26	20
Melbourne	20	11
Gold Coast	20	11

Twenty-four activities were observed during the airside discretionary period (Table 6.17). With the exception of five activities, the activities undertaken on the landside and airside overlapped. On the airside, no passengers were observed filling out an OPC, being scanned, or activating a scanner because these three activities were not available to them there. Passengers did undertake two extra: using a water fountain; and lying/sleeping. Only six passengers were observed doing these activities.

Table 6.17: Activities undertaken by passengers during the airside discretionary period

Activity list		
Interacting with group	Interacting with own technology	Reading/writing
Walking without luggage	Browsing	Eating/drinking
Visiting restroom	Sitting	Interacting with staff
Queuing	Repacking	Unpacking
Waiting/standing	Interacting with airport technology	Purchasing
Checking flight information	Grooming	Interacting with non-group
Checking signage	Walking with trolley	Using water fountain
Lying/sleeping	Saying goodbye	Walking with pram

There were five contexts associated with the way in which the passengers described their activities. Four of these have already been discussed: consumptive, entertaining, preparatory, and social reasons. The fifth context described involved the passenger describing passive reasons for their activity. Passengers described using their time at the airport to do nothing (Figure 6.14), and some viewed this time as a positive experience.

"I was OK, just lie down and do nothing. I found enough seat space to lie down and do nothing.[....] Nice to be able to do nothing."

Figure 6.14: Passenger discussing passive activity positively

However, passive activities were not always viewed as a positive experience; some passengers discussed having to sit and do nothing in negative terms (Figure 6.15).

"I hate that waiting area, cause there is nothing to do, it is, the seats aren't very comfortable, not that the ones down in the waiting area are either. But, um, there aren't that many stores, so I am a bit over it."

Figure 6.15: Passenger discussing passive activity negatively

Passengers were seen interacting with technology in all the airside locations and throughout the time spent airside; the items interacted with included all of the items described in the discussion of the overall discretionary period (Section 6.5.1). Interactions with airport technology were associated with purchasing items at the airport, or purchasing time to use the paid internet access computers.

At some point in their airport experience, passengers had to make their way to their allocated departure gate. Out of the seventy-one passengers, fifty-three sat at their departure gate during their discretionary airside period. Only sixteen of these left their departure gate to undertake further retail activity; of the sixteen, fourteen were in visual proximity to retail outlets, and the passenger only needed to walk a short distance to the retail outlets. Only two passengers chose to return to retail outlets which were out of their visual range, requiring a longer walk. Figure 6.16 shows Passenger 28 walking back from his departure gate to a cafe. As can be seen in the figure, the passenger had to walk for approximately two minutes to get from the departure gate to the cafe.

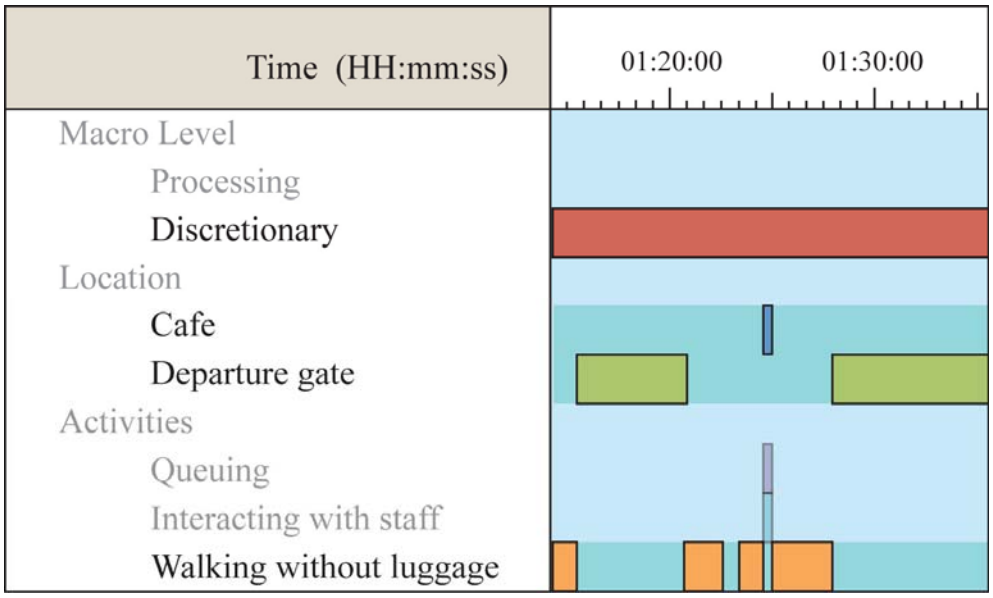

Figure 6.16: Activity profile of a passenger returning from the departure gate

The airside discretionary period finished when the airline made the announcement to board the flight. At this point, passengers could either continue with activities associated with their discretionary period, or go to their departure gate. Boarding is now considered.

Boarding

Boarding accounted for widest range of processing time, and there was a difference in the average times taken by the three airports. How boarding was coding can be found in Section 5.6. Gold Coast Airport had a much greater time allocated to boarding: 11 minutes compared to Brisbane's 5 minutes and Melbourne's 6 minutes (Figure 6.18). The maximum time observed was 56 minutes, and this occurred at Gold Coast Airport. When boarding commenced, Passenger 66 was still on the landside of the airport. It then took her over 56 minutes to get to her departure gate and be processed at boarding.

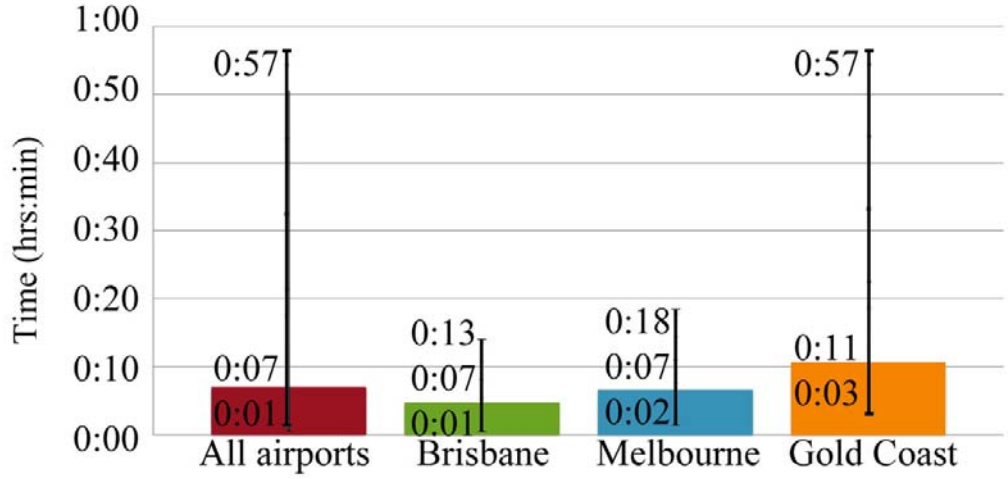

Figure 6.17: Average time spent in the boarding process for all and individual airports

There was a range of locations where passengers were situated when the boarding announcement was made. Not all passengers made their way to the departure gate once the boarding call was made. Table 6.18 shows that while all passengers ended up at the departure gate, thirty-three other locations were visited during the boarding time. There was a difference among the three airports in the number of passengers visiting locations during boarding. Three passengers went to at least one location other than the departure gate at Melbourne Airport (15%), eight at Brisbane Airport (26%), and eleven at Gold Coast Airport (55%); totalling twenty-two passengers.

Table 6.18: Locations visited by passengers during boarding

Location	**Departure gate**	**Shops**	**Cafe**	**Amenities**	**Seating area**	**Customs**	**Currency Exchange**	**Bar**
n=	*71*	*11*	*7*	*7*	*3*	*2*	*2*	*1*

Ten of the twenty-two passengers visited multiple locations before heading to the departure gate for boarding. For example, Passenger 66 was in security when the boarding announcement was made and still had to go through customs and duty-free areas (Figure 6.18); she appeared in no rush to board the flight.

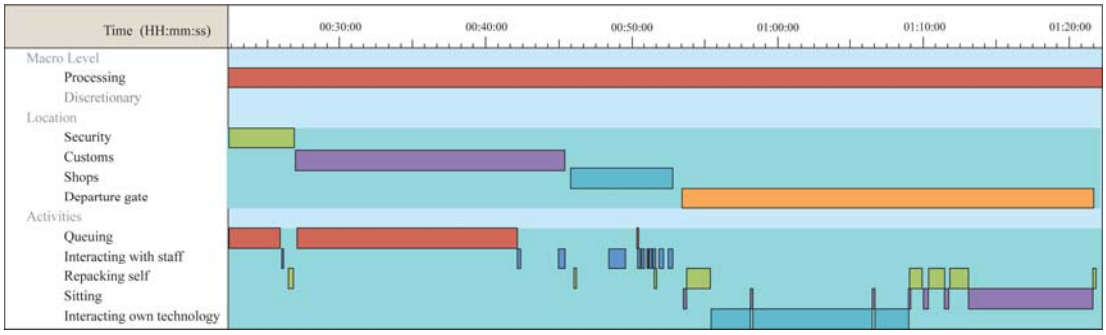

Figure 6.18: Activity profile of a passenger during the boarding process.

Boarding had the largest number of activities of all the processing domains, with twenty activities observed (Table 6.19). The activity passengers spent most time undertaking was queuing, which could take up as much as 93% of the time spent in boarding. The other main activities were interacting with group members, sitting/waiting, and reading/writing.

All the contexts that have been discussed throughout this section were observed at boarding. Contexts included: preparation for boarding, such as packing; socialising, such as interacting with group members; processing contexts, such as interacting with staff; consumptive activities, such as browsing, eating, drinking and purchasing; and passive activities, such as sitting and waiting.

Table 6.19: Activities undertaken by passengers during the boarding process

Activity list		
Queuing	Interacting with group member	Sitting/waiting
Reading/writing	Walking without luggage	Repacking
Unpacking	Interacting with own technology	Waiting/standing
Using restroom	Browsing	Eating/drinking
Walking with trolley	Interacting with staff	Interacting with airport technology
Purchasing	Walking with pram	Using water fountain
Interacting with non-group	Filling out OPC	

Various interactions were observed at boarding. For example, some passengers were observed interacting with staff; and some of these passengers indicated that this was how they found their boarding gate. There were two examples of passengers using airport technology during the boarding process; both examples were associated with passengers purchasing a product and using EFTPOS to pay for it. There was no technology available at any of the airports to assist with passenger boarding.

Boarding was associated with both positive and negative comments. Positive comments were associated with the ease and standard nature of the procedure and that they were prepared for the process. The negative comments were associated with confusion about the location or the timing of boarding. Boarding was frequently associated with particular tactics that were employed to reduce the time spent queuing (Figure 6.19). All of the twenty-two passengers who discussed tactics referred to monitoring the queue and waiting until there was a small queue, or no queue, before going the gate to be processed.

> "*Um, I think we, we actually waited until they queued up, and once a few people had started to go through and the queue wasn't that big, and it was moving quite freely, we decided to get up and go to the queue.*"

Figure 6.19: Passenger discussing tactics to reduce queuing at boarding

Once passengers had been processed at boarding, their airport experience was over. This thus concludes the discussion of results for Field Study One.

6.6 SUMMARY

This chapter explained the objectives of Field Study One, given in the form of the research question and two sub-research questions. This was followed by the specific methods used to answer the questions. Details of the research design were outlined, and the procedure was explained. Research results showed that there was a range of locations visited, and activities undertaken, throughout the passenger airport experience.

The next chapter discusses the results and how they answer the main and sub-research questions. It concludes by showing how the results were developed into an activity taxonomy, referred to as the Taxonomy of Passenger Activity (TOPA).

Chapter 7. Field Study One - discussion

7.1 INTRODUCTION

This chapter discusses the results of Field Study One and how these results help answer the research questions and sub-questions. The discussion focuses on four areas: (i) the processing and discretionary divide, (ii) the activities passengers undertake, (iii) the development of the Taxonomy of Passenger Activities (TOPA), and (iv) the interactions in which passengers engage. The chapter concludes by showing how the results and discussion outcomes were applied to Field Study Two, thus allowing further investigation of the main research question.

7.2 THE PROCESSING AND DISCRETIONARY DIVIDE

The airport experience is considered as being divided into processing and discretionary periods. Almost all research to date has focused on the processing periods (Section 2.4), and predominantly on the time taken to be processed at: check-in (Minton, 2008; Consumer Protection Group, 2009); security (Department for Transport, 2007); customs (Rehbein AOS Airport Consulting, 2007); and boarding (Kazda & Caves, 2007a). However, Field Study One shows that most of a passenger's time is devoted to discretionary periods. This discretionary time constitutes 64% of the dwell-time at the airport (Table 6.3). Therefore, this means that no substantive research has addressed two thirds of the passenger experience. What limited published research there is on discretionary periods has focused on the amount of money that passengers spend during their time at the airport (Graham, 2009). The research documented here is, therefore, an important contribution to knowledge of the complete passenger airport experience.

The amount of time passengers have for discretionary periods depends on how quickly they are processed, and as already reported, processing time differs among the three airports. The two larger airports, Brisbane and Melbourne, had a lower percentage of time allocated to passenger processing: 32% and 31% of dwell-time respectively. Gold Coast Airport had, on average, 46% of time allocated to processing periods (Table 6.3). However, the actual time spent in processing among airports was similar: between 34% and 38%. Gold Coast had a slightly longer

processing time – 4 minutes – than the other two. This was the result two factors: firstly, passengers have to go through two security checks, one for access to the domestic area and one for the international area; secondly Gold Coast airport calls their passengers for boarding earlier than the other (larger) airports as passengers have to walk onto the tarmac to board their plane, rather than an internal gangway.

The difference in dwell-time between the airports is due to passengers arriving closer to their departure time at Gold Coast, and therefore having less time – almost thirty minutes less – before boarding (Figure 6.1). This difference can be attributed to the difference in the physical and temporal characteristics of the three terminals. Both Brisbane and Melbourne Airports have substantial international departure schedules, and a whole terminal is allocated to these flights. Gold Coast Airport has fewer international flights, and an area within the main domestic departure area that converts to an international departure area 2 hours before an international flight. This means that Gold Coast Airport has the ambience of a domestic airport and, consequently, passengers arrive closer to their departure time.

When processing time is long, there is obviously less time that passengers can use for discretionary activities. Passengers spend money during discretionary periods, and this expenditure has become the major source of income to airports (Torres et al., 2005). It is, therefore, important to understand what factors lead to an increase or decrease in the potential discretionary time passengers have at airports. Results show that when passengers have most of their time allocated to processing, this time is predominantly spent at check-in (Table 6.3). Fifty passengers, or 70% of those observed, spent the greatest percentage of dwell-time at check-in, compared to the other three domains. The majority of this time was spent queuing (Table 6.6). This confirms previous research which holds that queuing is the most important factor in determining processing time (Rehbein AOS Airport Consulting, 2007; Consumer Protection Group, 2009; International Air Transport Association, 2010).

Previous research that has considered check-in has looked at the time-taken to process the passenger. Proposals to reduce the time focus on providing self-service technology (International Air Transport Association, 2009). This research has taken a different perspective - by understanding all activities passengers undertake at check-in, activities are identified that assist with, or hinder passenger processing. Although this has been suggested throughout airport related literature (Kazda & Caves, 2000a;

Caves & Pickard, 2001; Yeh & Kuo, 2003; Goetz & Graham, 2004; Fodness & Murray, 2007; Transportation Research Board of the National Academies, 2008; Popovic et al., 2009), until recently this had not been done. This research has taken the proposal further and looked not only at check-in but the complete experience, including discretionary periods. The activities observed throughout the total airport experience are now considered.

7.3 OBSERVED ACTIVITIES

Twenty-nine activities were observed and coded throughout the airport experience. Their locations and contexts were described in Section 6.5. The twenty-nine activities are shown in Table 7.1. The activity that passengers allocated the most time to was interacting with group members, followed by queuing, interacting with their own technology and walking without luggage.

Table 7.1: The list of passenger activities during Field Study One

Activity list		
Interacting with group	Queuing	Interacting with own technology
Walking without luggage	Reading/writing	Interacting with staff
Browsing	Eating/drinking	Sitting
Repacking	Filling out OPC	Unpacking
Waiting/standing	Saying goodbye	Interacting with airport technology
Walking with luggage	Walking with trolley	Grooming
Checking flight information	Using water fountain	Purchasing
Check signage	Being scanned	Activating scanner
Walking with pram	Interacting with non-group	Lying/sleeping
Undergoing random (extra) security check	Smoking	

There were various contexts in which the activities occurred; they are discussed in the results of Field Study One (Section 6.5), where the four most

frequent activities are explained. Activities can be associated with different contexts; to illustrate this, the four most frequent activities will be considered.

When passengers discussed interacting with their own group, the activity was associated with three different contexts: (i) a social context; (ii) a preparatory context; and (iii) a consumptive context. The social context was evident throughout the experience. Passengers reported that they were interacting with members of their group about general topics, and trying to "kill time" until their flight (Figure 6.11). The second context discussed by passengers was activities associated with preparing for future processing domains, such as the need to complete their OPC, or prepare other documents (Figure 6.5). The third context was associated with talking about what retail areas to go to, or what to buy (Figure 6.4). This resulted in the development of the three groups that the activities and their context could be categorised into.

When passengers were asked about queuing, they commented that they were simply queuing and did not discuss other activities engaged in during their queue time, thus, queuing was considered a specific activity group, and is referred to as "queuing activity". Research into how passengers spend their time in the queue is an area that requires further study.

The third most common activity was interacting with a passenger's own technology. When passengers discussed interacting with their own technology, this activity was also associated with three different contexts: (i) a social context, (ii) a preparatory context, and (iii) an entertaining context. 'Social' and 'preparatory' contexts are discussed above. The 'entertaining' context refers to passengers using electronic equipment, or reading a book or newspaper to entertain themselves while waiting for their flight.

The fourth most frequent activity was walking without luggage. Walking between domains was never discussed directly by passengers and they did not mention other activities undertaken while walking. Walking, therefore, is considered as a specific activity group and is referred to as 'moving activity'.

All twenty-nine activities were investigated in relation to the context in which they occurred. The context was dependent on: the location, whether a passenger was being processed or not, and how the passenger described the activity during the

retrospective interview. All activities fell into at least one of eight taxonomic groups of TOPA, which is discussed in the following section.

7.4 THE TAXONOMY OF PASSENGER ACTIVITY

TOPA consists of eight taxonomic groups, and developed from the analysis of the activities observed, and their context, as described by the passengers. These groups were: (i) processing activity, (ii) queuing activity, (iii) consumptive activity, (iv) walking activity, (v) passive activity, (vi) entertainment activity, (vii) social activity, and (viii) preparatory activity (Kirk et al., 2012). Table 7.2 provides an overview of where activities were observed, and the taxonomic group, or groups, to which they were assigned. Each TOPA group is now described in detail.

ivity groups

ting wn ogy	Queuing	Unpacking	Repacking	Walking without luggage	Reading/ writing	Waiting/ standing	Sitting	Eating/ drinking	Walking with trolley	Browsing
ting wn ogy	Queuing	Unpacking	Repacking	Walking without luggage	Reading/ writing	Waiting/ standing	Sitting		Walking with trolley	
ting wn ogy	Queuing	Unpacking	Repacking	Walking without luggage	Reading/ writing	Waiting/ standing	Sitting	Eating/ drinking	Walking with trolley	Browsing
ting wn ogy	Queuing	Unpacking	Repacking	Walking without luggage	Reading/ writing	Waiting/ standing	Sitting	Eating/ drinking		
ting wn ogy	Queuing	Unpacking	Repacking	Walking without luggage	Reading/ writing	Waiting/ standing	Sitting	Eating/ drinking	Walking with trolley	Browsing
ting wn ogy	Queuing	Unpacking	Repacking	Walking without luggage	Reading/ writing	Waiting/ standing	Sitting	Eating/ drinking	Walking with trolley	Browsing
tory	Queuing	Processing	Processing	Moving	Preparatory	Passive	Passive	Consumptive	Moving	Consumptive
al		Preparatory	Preparatory		Social			Social		Social
ment					Entertainment					

with ge						Smoking			
with ge									
	Activating scanner	Being scanned	Checking signage	Saying goodbye			Random extra security check		
	Activating scanner	Being scanned						Grooming	Lying/ sleeping
			Checking signage	Saying goodbye	Using water fountain				
					Using water fountain				
ng	Processing	Processing	Preparatory	Social	Consumptive	Consumptive	Processing	Preparatory	Passive

7.4.1 Processing activity

Processing activities were essential for passengers to be able to board their flight, and could only occur at the four processing domains: check-in, security, customs, or boarding. Passengers discussed these as necessary activities that they needed to complete. The main activity that fell into this taxonomic group was interacting with staff, which involved the passenger and staff member having a formal discussion about what was required for that specific domain. For example, at security, this involved staff discussing what a passenger could and could not take through the security domain. The other activities that fell into the processing taxonomic group were associated with getting through security, such as unpacking and repacking at the security gate, or filling out OPCs at customs.

This activity group is what previous research into airports focuses on. This previous research includes work by the Consumer Protection Group (2009), Department of Transport (2007), Rehbein AOS Airport Consulting (2007) and Kazda and Caves (2007a). The previous research considers processing to start when a passenger enters the queue, and finishes once they finish the interaction with a member of staff. TOPA considers 'processing activities' to only focus on the interaction between the passenger and member of staff – activities were assigned to the 'processing activity' group when they were done at a domain interface. Thus, the definition of the 'processing activity' group is different to the traditional view of 'processing' contained in the literature. This allows a more complex understanding of airport processing. By dividing queuing activity and processing activity, the procedure at each domain is analysed to finer level, providing innovative solutions to improving the process and the passenger experience. This is developed further in Section 9.3.1.

7.4.2 Queuing activity

As defined by Mann (1969), queuing occurs when passengers are waiting their turn for a member of staff to provide them with a service. Queuing occurred throughout the airport experience, both during discretionary and processing periods and was observed at every domain. Every passenger observed had to queue at a minimum of one domain. During discretionary periods, queuing only occurred when a passenger chose to undertake consumptive activity, such as shopping or purchasing

food or drink at a cafe. Not every passenger queued during their discretionary periods. Various activities could be seen while passengers were queuing; however, it was not clear into which activity group they fell, and passengers could not remember what they were doing while queuing when asked in the retrospective interviews.

The queuing activity group, like the processing activity group, has been a main focus of previous research on airport experience. This includes research by the Consumer Protection Group (2009), Department for Transport (2007), Rehbein AOS Airport Consulting (2007) and Kazda and Caves (2007a). However, unlike the research documented here, this previous research does not identify the activities that can potentially improve the queuing experience, and subsequent processing times. Improving the queuing experience is developed further in Section 9.3.2

Queuing activity was also shown to be a factor in the passengers' experience, as they mentioned it when recalling their airport experience. As interviews took place approximately four weeks after the observation, only the most memorable activities would be mentioned. Indeed, every processing domain was associated with queuing in the interview transcripts. However, queuing does not impact the passenger experience to the extent as previous research suggests (Department for Transport, 2007; Rehbein AOS Airport Consulting, 2007; Consumer Protection Group, 2009). When passengers had to queue they discussed this in neutral terms. This means that passengers expect to queue. Only when passengers had to queue for over thirty minutes did they discuss queuing negatively. Therefore, passengers expect to queue at processing domains, as long as it is not over thirty minutes. Thirty minutes is longer than previous research has indicated – the CAA deemed acceptable queue time to be twelve minutes (Consumer Protection Group, 2009). However, rather than focusing on acceptable queue times, TOPA provides a new perspective on ways to improve the queuing experience, by understanding how passengers use their queue time, and how it could be used more productively.

7.4.3 Consumptive activity

The limited research into passengers' discretionary periods focuses on one activity – purchasing (Torres et al., 2005; Kazda & Caves, 2007a; Loo, 2008; Castillo-Manzano, 2009). The research investigates how much passengers purchase during their shopping experience. This activity is categorised into the consumptive

activity group. This research shows that purchasing is only a very small part of the overall retail experience passengers have (Figure 7.1). Therefore, this activity group has had minimal research into it.

Consumptive activity group = Browsing; Interacting with own group; Interacting with staff; Eating/drinking; **Purchasing**; Interacting with airport technology; Using water fountain; Smoking

Figure 7.1: Activities associated with the consumptive group

The greatest amount of consumptive activity comes from the browsing that passengers undertake, and from talking with companions or staff about the various products and services available. Passengers discussed the fact that most of the purchases made at the airports had some degree of pre-planning. This shows a link between the consumptive and preparatory activity groups. Results show that almost 70% of purchases were either specifically planned, or planned but without a specific item being decided on before the actual purchase (Section 6.5.1). This result challenges the previous research on airport retailing which holds that the more time passengers are at the airport, the more money they spend (Castillo-Manzano, 2009).

7.4.4 Moving activity

Moving activities occurred throughout the airport, and involved passengers walking from place to place. These activities were related to how passengers get through the airport, and in particular, what objects accompanied them. These items included luggage, trolleys, and prams. Again, these activities occurred in both discretionary and processing periods.

The moving activity group has been researched to inform the design of airports, in particular, walking distances between domains (Kazda & Caves, 2007a). Consideration of passenger movement, therefore, has previously only been considered in terms of the physical layout of the airport space, and how long it takes passengers to walk from one place to the next. The experience that passengers have during their periods of movement, and how other activity groups influence their movement, has not been considered. This is considered in more depth in Section 9.3.4.

7.4.5 Passive activity

Passive activities were associated with passengers sitting or standing without interacting with any item or person while in the airport. If this occurred while queuing, it would be categorised in the queuing taxonomy and not the passive activity group. Passive activities occurred throughout the airport experience, but were predominantly observed during discretionary periods. Interestingly, passengers viewed these activities as both positive and negative. Some passengers who sat and waited said that this was a negative experience as they were bored, and that there was nothing to do at the airport (Figure 6.15); other passengers stated that they liked this time as they were able to relax and do nothing (Figure 6.14).

7.4.6 Entertainment activity

Entertainment activities were associated with passengers entertaining themselves, with no other people involved. Passengers referred to these as a way to "kill time" until departure. Entertainment activities were observed throughout the airport experience, and in both processing and discretionary periods. Activities associated with this group included: interacting with own technology, reading/writing, and interacting with airport technology (The use of airport technology is discussed further in Section 7.5).

The entertainment activity group had the greatest allocation of passenger time; in particular, time devoted to interacting with their own technology. The predominance of this activity would be a major change from activities observed a decade ago as the amount of personal technology has grown greatly since the beginning of 21st century. The importance of using one's own technology is shown by the amount of time allocated to it. However, there has been limited research published on how airports can support these activities.

Entertainment and social activities overlapped and interacted throughout the airport experience. For example, when passengers interact with their own technology, they can be using social sites (such as Facebook or Skype); this activity can be considered both an entertainment and social activity. This illustrates the interactions that occur between the activity groups, and this is elaborated further in Section 9.4.

7.4.7 Social activity

Social activities were associated with passengers interacting with other people throughout the airport experience, in both processing and discretionary periods, and at every location. Passengers also discussed these activities as ways of "killing time". This activity group included: interacting with group members, non-group members and staff. The social activities were viewed by passengers as positive ways to spend their time in the airport. They were also important to whether passengers remembered their experience at a processing domain as good one. For example, passengers viewed social conversations with staff members at check-in and security as a positive aspect of their experience, and therefore, remembered the experience as a good one. This result confirms Minton's (2008) research, where he concludes that passenger often prefer an interactive experience with 'an actual person'.

Social activities interacted with preparatory activities to allow passengers to prepare for future processing domains. For example, during social interactions between group members, experienced travellers would inform novice travellers of activities needed to be completed for upcoming domains, or of rules on amounts of alcohol allowed into destination countries. Again, this illustrates interactions between the activity groups, which can assist in improving the experience.

However, social activities were observed to also cause problems for airport processes. Groups often waited for other members, so as to allow their group to reform: this activity has been seen to cause the occasional obstruction to passenger flow (Popovic et al., 2009).

7.4.8 Preparatory activity

Preparatory activities were associated with passengers preparing for future processing domains at the airport. Passengers described these activities as ways to take control of their airport experience, and a way to be prepared. They occurred throughout the airport, both during discretionary and processing periods. Preparatory activities included interacting with staff, interacting with their group, unpacking and repacking. Whether an activity was grouped into 'preparatory activity' or 'processing activity' was dependant on its location. For example, if the passenger completed their OPC on the landside before getting to customs, this was a preparatory activity; if it happened at the customs desk this was a processing activity. Or if a check-in staff

member discussed with a passenger what would happen at security this interaction was a preparatory activity; if the interaction happened when the passenger was at the front of the line in security it was a processing activity. The location of the same activity has an effect on how quickly the passenger is processed: a preparatory activity will lead to faster processing, as the passenger is ready for the interaction, while a processing activity will slow the process, as it occurs at the domain interface.

This research shows that when passengers were knowledgeable of an upcoming domain, they tried to control the processing experience by preparing themselves. In particular, preparing for security and customs was a prominent feature of the passenger's landside experience. Preparation, such as queuing for check-in before it was open (Figure 6.6), was also seen during discretionary periods. The majority of purchases at airport retail outlets were pre-planned, indicating passengers prepared what they were going to do purchase during their time in the retail environment (Table 6.7). This activity group concurs with the findings of Minton (2008), who found that passengers try to gain control over an experience, as this reduces stress.

Processing is identified in Section 7.4.1 as the main focus of previous research. However, while preparatory activities have not been previously researched in the related literature they are here seen to improve the passenger experience. They also result in passengers getting through processing domains more quickly than passengers who were not prepared. If the positive comments passengers gave about the four domains are considered, they are associated with the processing being considered straightforward and easy. This straightforward view of processing came from knowledge of the process, which allowed them to be prepared for the domain and, as a consequence, improve their airport experience. Three sources of information that allowed the passenger to prepare were: (i) previous knowledge of the domains, (ii) knowledge of the domain by a group member, and (iii) information discussed by a member of staff. How airports can use this new knowledge is elaborated in Section 9.3.8.

7.5 OBSERVED INTERACTIONS

In this section the second sub-question is addressed, namely "What do passengers interact with during their airport experience?" Passengers were observed to interact with various technologies and people at all locations throughout their

airport experience; these interactions are described in Table 7.3. Interactions with people included members of staff, group members, and non-group members. Interactions with technologies included airport owned technology, such as computers and EFTPOS machines, and individually owned technology, such as tablets and mobile phones.

Table 7.3: Passengers' interaction activities

Pre-Check-in Landside Discretionary	Interacting with staff	Interacting with group member	Interacting with own technology		
Check-in	Interacting with staff	Interacting with group member	Interacting with own technology	Interacting with airport technology	Interacting with non-group member
Post-Check-in Landside Discretionary	Interacting with staff	Interacting with group member	Interacting with own technology	Interacting with airport technology	Interacting with non-group member
Security/ Customs	Interacting with staff	Interacting with group member	Interacting with own technology	Interacting with airport technology	
Airside Discretionary	Interacting with staff	Interacting with group member	Interacting with own technology	Interacting with airport technology	Interacting with non-group member
Boarding	Interacting with staff	Interacting with group member	Interacting with own technology	Interacting with airport technology	
	Processing Preparatory Consumptive Social	Preparatory Consumptive Social	Preparatory Social Entertaining	Preparatory Consumptive Entertaining	Social

Interestingly, no use of airport technology was associated with the processing of passengers at the airports researched. This was despite the fact that the introduction and use of technology had been continually proposed as a way of improving processing at airports (Transportation Research Board of the National Academies, 2008; International Air Transport Association, 2009). The only use of airport technology observed during processing was not directly associated with the actual processing of passengers. Observed at check-in and security only, these technology interactions involved passengers checking the weight of their bags on airport-owned scales; thus, they would fall into the preparatory activity group. All

other airport-owned technology use occurred in the discretionary periods, or while purchasing during the boarding period. On the whole, therefore, the interactions with airport-owned technology were associated with preparatory, consumptive or entertainment activity groups, and not the processing activity group.

There were four activities observed and coded which involved the use of technology owned by the airport: checking flight information, activating the scanner, being scanned and random security checks. However, these were not coded as "interacting with airport technology" as passengers did not directly interact with any of this technology. The only interaction associated with processing was when a passenger interacted with a staff member. All domains required passengers to speak to staff members in order to be processed. Interactions with members of staff were also associated with preparatory, social and consumptive taxonomic groups and are discussed in Section 7.4.7.

No conclusions on how airport technology affects the processing of passengers can be discussed as there is currently no technology available for processing. However, data from this research provides an excellent baseline from which to see if, and how, technology improves the passenger experience.

7.6 IMPLICATIONS FOR FIELD STUDY TWO

The TOPA developed from Field Study One was applied to Field Study Two. The three domains of (i) check-in, (ii) security, and (iii) boarding were observed. TOPA, developed in this chapter, was applied to provide a view of the experience passengers have in Field Study Two. A particular focus was on the preparatory activities to see if they did have an effect on processing time. TOPA was also used to look at the retrospective interviews with the staff members.

7.7 SUMMARY

This research shows that most airport time is spent in discretionary periods. As minimal research has investigated discretionary time this research significantly contributes to an understanding of the complete airport experience. A variety of activities were observed, and the context of these activities permitted the development of TOPA. The observational data and retrospective interviews provided the context in which to understand the experience passengers had in the airport.

Understanding the experience with a passenger focus was an important factor in the development of TOPA.

TOPA showed eight taxonomic groups of activities that passengers can undertake during their experience. The eight activity groups are: (i) processing, (ii) preparatory, (iii) consumptive, (iv) social, (v) entertainment, (vi) passive, (vii) queuing and (viii) moving. Two of the groups, processing and queuing activity, have been the focus of most previous research. However, this research takes the novel approach of dividing the processing periods into processing activity and queuing activity. Previously these activity groups were considered together in the processing period.

There are six additional groups that are important to the passengers' experience. Preparatory activities, for example, have been shown to assist in passenger processing at all domains, and have the most potential for supporting the passenger and reducing processing time. Preparation activities were also particularly important to a positive passenger experience as they were associated with enabling a straight forward process.

There are a variety of interactions that passengers engaged in throughout the airport. Currently, however, none of the interactions with technology are associated with processing. This means that this research cannot look at how passengers either used or ignored technology. Technology is continually proposed in the literature as the way to improve processing domains; this research provides a baseline from which to determine how technology will affect passenger experience in the future.

TOPA was used to understand the experience of passengers at the various processing domains. The next chapter details Field Study Two.

Chapter 8. Field Study Two

8.1 INTRODUCTION

This chapter covers Field Study Two. It starts by discussing the methods specific to this study, namely how data was collected on the day of the observation, and how the interviews were conducted with airport staff members. This is followed by an explanation of the field study analysis, the results of the analysis, and a discussion of these results.

Field Study Two concentrated on the activities passengers undertook during processing periods, and allowed these activities to be compared at each processing domain. In addition, the study used the Taxonomy of Passenger Activity (TOPA) to understand how passengers distributed their time at various processing domains.

The interviews with staff at the four processing domains are included to provide a front-line perspective of the passenger experience. This focus provides information on what staff members regard as the major problems passengers encounter, and what could be done to ameliorate these problems. Examples of problem situations that passengers encountered during Field Study One are discussed.

8.2 METHODS

The methodological foundations of this field study have been discussed in Chapter 5. This section now concentrates on explaining the details specific to Field Study Two.

The field study consisted of two parts. The first part entailed observation of passengers at three of the four processing domains: check-in, security, and boarding. The customs domain was excluded due to Government restrictions on videorecording in this area. The observation process examined the activities every passenger undertook at that domain during a thirty minute time period. The observation process at the three domains is discussed below. The second part of the field study involved interviewing members of staff at each domain about the general passenger airport experience, and the problems passengers typically encountered during Field Study

One. Customs was able to be included in the interviews. Each part of Field Study Two is now explained in more detail.

8.2.1 Observation of domains

The observation procedure involved recording passengers as they passed through each processing domain. During the observations, the researcher maintained a distance of between ten and fifteen meters from the domain. Each domain had a specific procedure and these are considered in turn. A total of four hundred and five passengers were observed passing through the processing domains during the observations.

Check-in

The check-in domain at Brisbane International Airport was used for this field study. Recording at check-in began thirty minutes after check-in opened, and continued for one hour. All passengers who entered the check-in area were recorded; resulting in sixty-four passengers being coded.

Security

The security domains at Melbourne International Airport and Brisbane International Airport were used for this field study. Two airports were used for observing security, as it was the only domain that had different layouts in the various airports. Recording began during a busy period (determined according to advice from security staff) and continued for one hour. All passengers who entered the security area were recorded. One hundred and nineteen passengers were coded at Melbourne, and eighty-four passengers were coded at Brisbane airport, totalling two hundred and three passengers.

Boarding

The boarding domain at Brisbane International Airport was used for this field study. The same flight used at check-in was also recorded for boarding. Recording at boarding started approximately ten minutes before boarding commenced, when staff members began their preparation for the boarding process. Recording lasted until all passengers boarded the flight, and this took less than one hour. All passengers who entered the boarding process were recorded, and one hundred and forty-eight passengers were coded.

8.2.2 Staff interviews

All processing domains were used for the staff interviews. The domains of check-in and boarding were incorporated into one interview as the same airline staff worked at both of these domains (Appendix G). Security and customs staff had separate interviews for each domain (Appendix G). The staff members involved in the interviews were recruited through their manager, and gave their personal permission to be interviewed (Appendix A). Due to financial and time constraints, only members of staff at Brisbane International Airport were interviewed. Each interview took between thirty and forty-five minutes, involved two or three members of staff, and was recorded on a voice recorder. Two interviews occurred for each domain, making a total of six interviews. A script was prepared before the interview and was not seen by any interviewees (Appendix G).

8.3 ANALYSIS

This section describes how the data collected during Field Study Two was analysed. The analysis techniques used for each part of the study are introduced and the coding scheme is explained. One researcher coded all data in Field Study Two, and coding (of the observations and interviews) occurred within a week of recording. To ensure it was rigorously executed, a 'blind' researcher was used to check the coding (Section 5.6).

8.3.1 Observation analysis

The data collected during the observation was coded using Noldus Observer software (Noldus, 2011). The coding scheme was developed using two levels of coding: (i) "activity", and (ii) "taxonomy". Further information on the "activity" coding level is found in Section 5.6. Details for setting up the coding scheme are similar to those for Field Study One. Both levels were coded simultaneously as the passengers undertook each activity. Activity level codes were dependant on activities that passengers actually undertook during their experience at each domain. Twenty-nine activities from Field Study One were coded (Table 6.6), and only one new activity – "running without luggage" – was observed during Field Study Two.

Coding of activities occurred as passengers moved through the processing domain. For example, queuing was coded when a passenger entered a domain where there were a number of other passengers waiting to be served by a member of staff.

All activities the passenger carried out were coded until the passenger left the domain location. Activities were also coded using TOPA. The TOPA group's activities fell into were selected by using Table 7.2. For example the activity of queuing could only fall into the TOPA group "Queuing". If the passenger carried out the activity of interacting with staff, by looking at Table 7.2 it can be seen that "interacting with staff" could fall into either Processing, Preparatory, Social or Consumptive groups. The group selected was dependant on the context observed, and the location of the passenger. If the passenger was at the domain desk then this was coded as Processing. If it happened before the passenger reached the domain this was coded as either Preparatory or Social. If it was ambiguous then both TOPA groups were coded. The list of the TOPA groups can be found in Section 7.4.

Observer output was provided both visually and quantitatively. The visual output consists of two parts (Figure 8.1). The top part of the figure (marked in blue) shows the activity profile, which illustrates what activities passengers undertook at each domain. Below this is the taxonomic profile (marked in orange), which illustrates which TOPA group the activity was categorised into. The two parts of the figure are referred to as the "passenger profile".

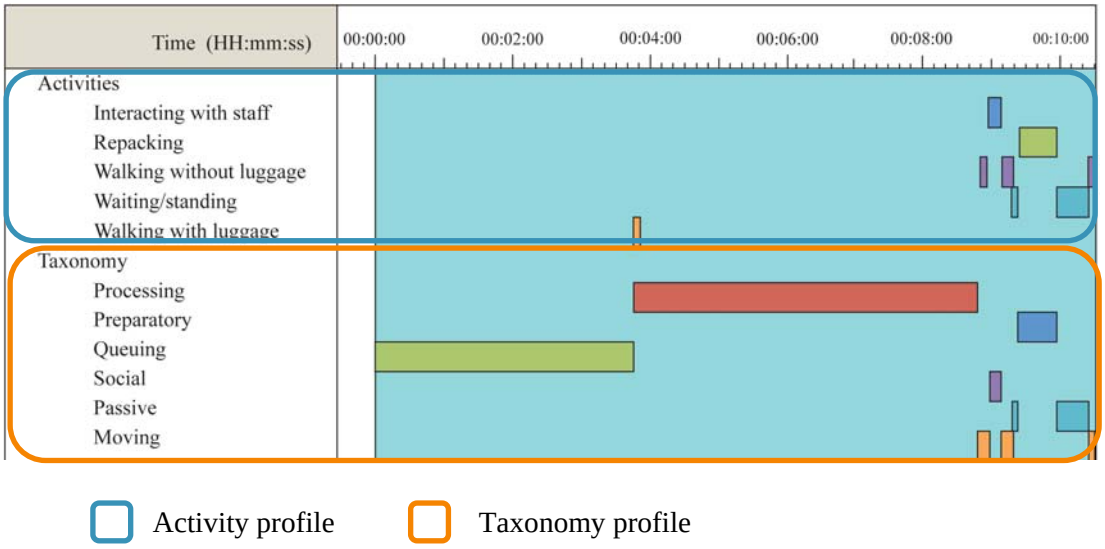

Figure 8.1: Activity and taxonomy profiles that makes up the passenger profile

8.3.2 Staff interview analysis

All interviews were transcribed by the researcher and the transcripts were coded using Atlas.ti software (Atlas.ti, 2010). The coding scheme was developed using three levels of coding. Two of these levels – "activity" and "taxonomy" – have already been discussed (Section 8.3.1), and were used in the observation coding for

Field Study Two. While the activity and taxonomy levels complemented the observation analysis (Sections 5.6 and 7.4), the third level of coding was dependant on what the staff member discussed during their interview.

There were three main areas that were discussed by staff: (i) communication, (ii) problems, and (iii) improvements. Communication was coded as either "positive" or "negative". Problems were associated with legal terminology, the passenger's knowledge, the continually changing rules, time constraints, and differences in other parts of the world. Improvements were coded when staff proposed solutions that could support the passenger experience.

8.4 OBSERVATION OF DOMAINS

This section describes the results from the observations at check-in, security and boarding. The results from the observations of passenger activity at the three processing domains are first considered. TOPA was applied to give an original insight into these processing periods.

8.4.1 Check-in

Check-in activities that passengers undertook can be seen in Table 8.1. Passengers spent most of their time at check-in queuing, which could comprise as much as 87% of the time spent there. The activity that passengers spent the second largest amount of time carrying out was interacting with staff. Activities undertaken by passengers, other than queuing and interacting with staff, were mostly associated with: preparing for checking in, such as unpacking or repacking; preparing for the next stage of processing; and interacting with members of their own group. Activities in Field Study Two were in the same as Field Study One (Section 6.5.2).

Table 8.1: Activities undertaken by passengers during the check-in process

Activity list		
Queuing	Interacting with staff	Interacting with group member
Filling out OPC	Walking with luggage	Unpacking
Repacking	Waiting/standing	Walking with pram
Walking with trolley	Walking without luggage	

The activity profile (marked in blue in Figure 8.2) for processing comprises of: interacting with staff; unpacking and repacking; and, for those in a group, interacting with other members of the group. The activity that differed most among passengers was the amount of time spent queuing. Figure 8.2 compares two passenger profiles: one passenger (top passenger profile in Figure 8.2) does not queue, while the other (bottom passenger profile in Figure 8.2) spends over 23 minutes in queuing. This illustrates the difference between the activities passengers carry-out at check-in. The taxonomy profile (marked in orange) was similar for the majority of passengers, and incorporated the TOPA groups of Queuing, Moving, and Processing.

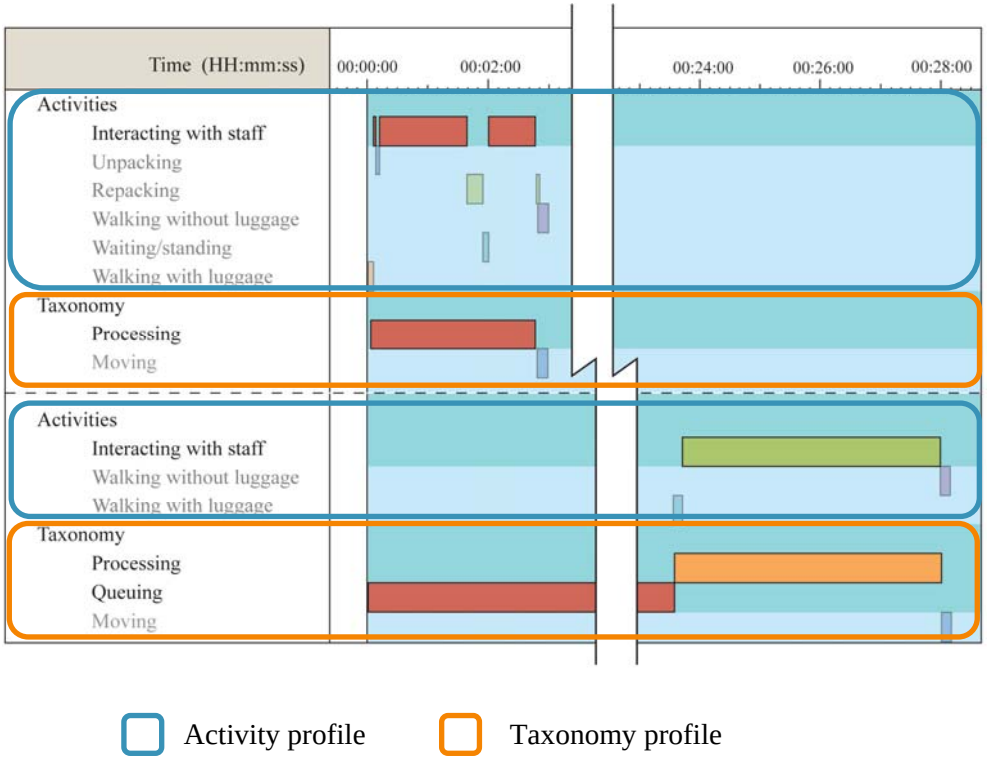

Figure 8.2: Comparison of two passenger profiles at check-in

Every passenger was observed undertaking processing and moving activities. Only one passenger did not undertake any queuing activities. Only nine passengers were observed undertaking preparatory activities during their check-in experience (Table 8.2).

Table 8.2: Number of passengers undertaking the TOPA group activities at check-in

TOPA Group	No. of passengers
Processing	64
Moving	64
Queuing	63
Preparatory	9
n=	64

Activities that could be considered either processing or preparatory were mainly observed to occur when the passengers were located at the check-in desk, and therefore, were categorised as processing activities. The activities of the nine passengers who were seen to undertake preparatory activities while queuing involved unpacking their bags. Only one passenger was observed filling out their Outgoing Passenger Card (OPC) while queuing.

The greatest variation seen between the TOPA groups was with activities associated with processing and queuing (Figure 8.3). The average time spent undertaking processing activities was 4 minutes ranging, from 1 minute to 11 minutes. The average time undertaking queuing activities was 14 minutes, from 1 minute to 26 minutes. Activities associated with preparatory and moving groups were all around 1 minute. This shows that the greatest variation between the passengers time was in the TOPA groups of processing and queuing.

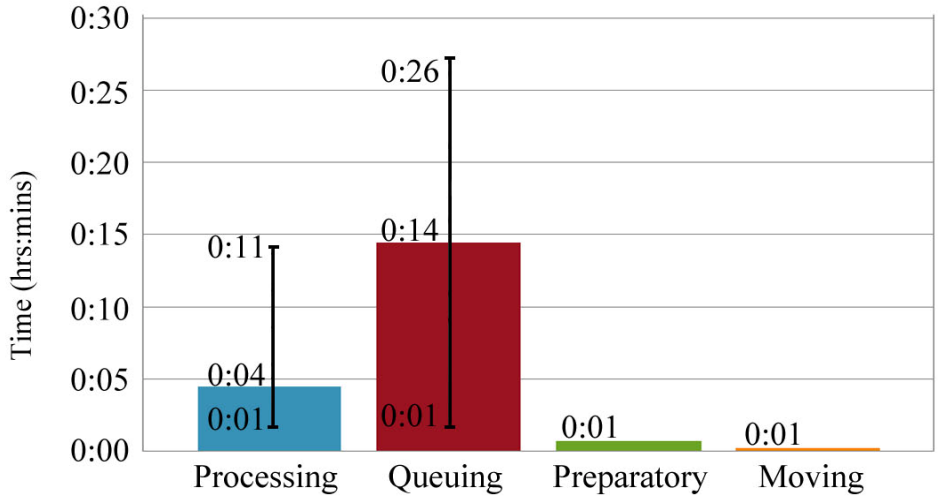

Figure 8.3: The average, maximum and minimum time spent undertaking activities associated with four TOPA groups at check-in

It was not clear from the analysis of Field Study Two exactly how the passengers apportioned their time queuing. This was due to two factors. The first factor was the arrangement of the queue. The "snake" queue system (Minton, 2008) meant that passengers blocked the researcher's view of other passengers. The second factor was that when passengers were interacting with each other, it was not clear which taxonomic group this would fall into, as the observer could not hear the conversation. This means there may have been additional preparatory activities while passengers were queuing.

The interactions undertaken by passengers were with members of staff, their own technology, and members of their own group. These findings concur with the results of the interactions that were observed at Check-in during Field Study One.

8.4.2 Security

Fifteen activities were observed at security and can be seen in Table 8.3 Fourteen of these activities were observed during Field Study One; the additional activity of "running without luggage" was observed at security. Passengers 74, 75, 76 and 77, who all appeared to be travelling together, were observed running from the security area to join the customs queue.

Table 8.3: Activities undertaken by passengers during the security process

Activity list		
Queuing	Walking without luggage	Repacking
Waiting/standing	Interacting with staff	Unpacking
Interacting with group	Random extra security check	Filling out OPC
Interacting own technology	Eating/drinking	Activating scanner
Being scanned	Sitting	Running without luggage

The activity that passengers spent most time undertaking was queuing. Queuing could take up as much as 88% of the time spent in security. The other main activities were walking through security, repacking, and waiting/standing (Table 8.3). The interactions undertaken by passengers were with members of staff, their

own technology, and members of their own group. These findings concur with the results of Field Study One.

The main difference between the two airports observed was the time passengers spent queuing. Longer queuing times were observed at Melbourne Airport. However, this was due to the angle of recording at Melbourne airport, and a greater amount of queuing space was captured in the video footage. No other major difference was seen between the security domains between the two airports.

The major difference among passengers' profiles was how long they spent interacting with members of staff. This was associated with extra security checks due to the passenger not having removed the correct items from their luggage or pockets.

Figure 8.4 illustrates activities undertaken by two passengers at security. The first passenger's profile (top passenger profile in Figure 8.4) shows that the passenger got through security in approximately 3 minutes, with no queuing and no interaction with staff. The time they spent preparing for security allowed them to pass through the process without any problems. The other passenger's profile (bottom passenger profile in Figure 8.4) shows that this passenger got through security in over 9 minutes, with no queuing. This passenger had also spent time preparing for the interaction; they had correctly removed the necessary times from their person and so passed uneventfully through the metal detector. However, they had to interact with a staff member as they had failed to take something out of their luggage; this resulted in the increased time at security.

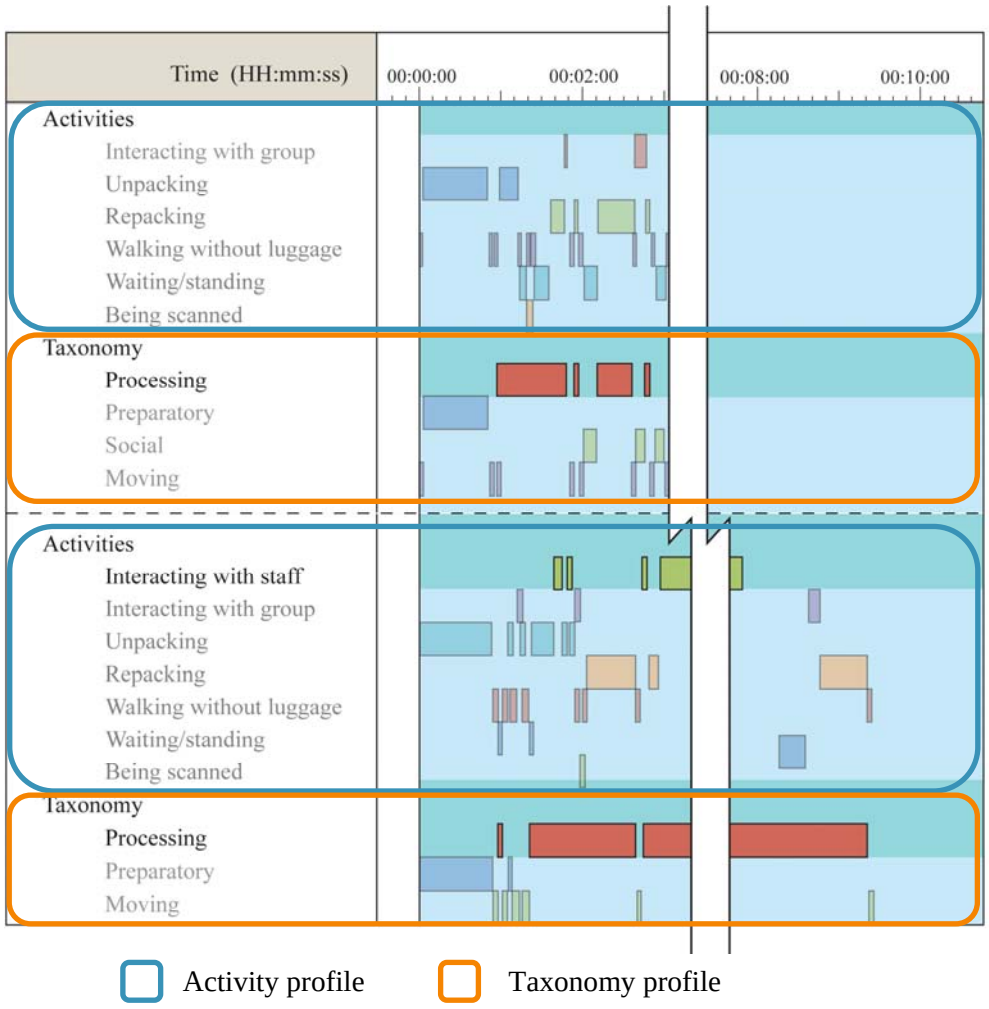

Figure 8.4: Comparison of two passenger profiles at security

The greatest variation seen between the TOPA groups was with activities associated with Processing, Queuing and Preparatory (Figure 8.5). The average time spent undertaking processing activities was 2 minutes, ranging from under 1 minute to 9 minutes. The average time undertaking queuing activities was 1 minute, from no queuing to 5 minutes. Preparatory activities also should a range of time allocated to them, averaging 1 minute, and ranging from no preparation to 4 minutes of preparatory activities. Activities associated with the moving group were all under one minute. This shows that the greatest variation between the passenger's time was in the TOPA groups of processing, queuing and preparatory.

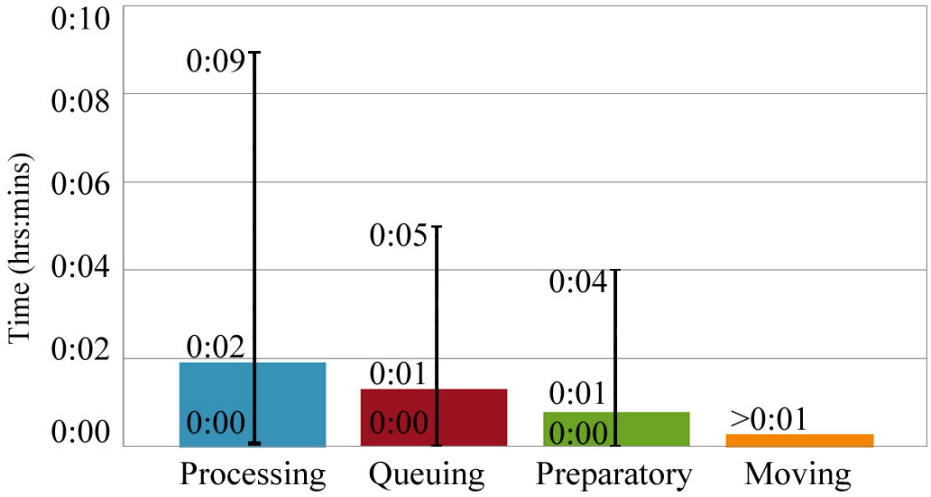

Figure 8.5: The average, maximum and minimum time spent undertaking activities associated with four TOPA groups at security

Every passenger was observed undertaking processing and moving activities. Over half of the passengers (56%) had to undertake queuing activities and preparatory activities were observed during this time. The majority of passengers (81%) were observed to undertake some preparatory activities (Table 8.4).

Table 8.4: Number of passengers undertaking the TOPA group activities at security

TOPA Group	No. of passengers
Processing	203
Moving	203
Preparatory	164
Queuing	114
n=	203

Seventeen passengers had to return when they activated the scanner. Of these seventeen passengers, fifteen were observed to undertake preparatory activities. Therefore, it was not due to passenger failing to prepare for security; rather it is the lack of correct preparation. Observations of these passengers revealed that they had not removed the necessary items from their hand luggage or person. These results concur with those found at security during Field Study One.

8.4.3 Boarding

Nine activities were observed at boarding and can be seen in Figure 8.6. The activities are compatible with Field Study One results.

Table 8.5: Activities undertaken by passengers during the boarding process

Activity list		
Queuing	Interacting with group member	Reading/writing
Walking without luggage	Unpacking	Interacting with own technology
Waiting/standing	Eating/drinking	Interacting with staff

The activity that passengers spent most time in was queuing; this could comprise as much as 97% of the time spent at boarding. The activity that passengers spent the second largest amount of time undertaking was interacting with their group. Other interactions undertaken were their own technology and members of the boarding staff. Field Study One (Section 6.5.1) delivered the same results.

The activity profile (marked in blue in Figure 8.6) for processing comprises of queuing (with some unpacking while in the queue), and then interacting with staff. There was little difference observed between all the passenger profiles. A representative passenger profile can be seen in Figure 8.6. The taxonomy profile (marked in orange in Figure 8.6) was similar for almost every one of the one hundred and forty-eight passengers observed. This involved queuing and preparation while in the queue, and then being processed.

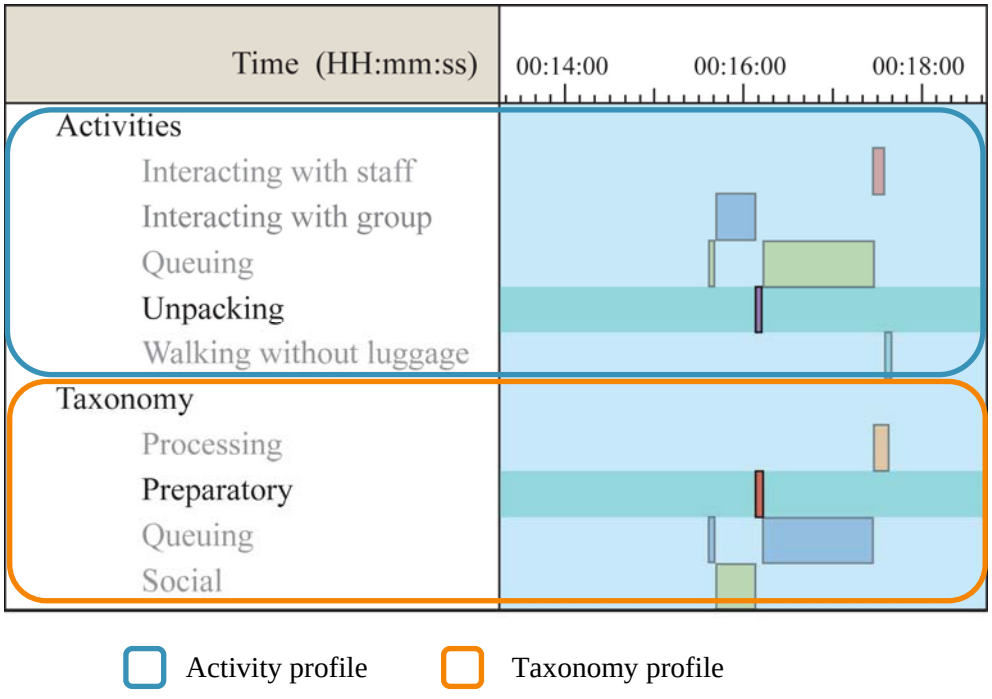

Figure 8.6: Passenger profile at boarding

Interestingly, no passenger was seen interacting with a member of the airline staff for a long period of time, as they were prepared for the interaction. Without preparation, the interaction would have been longer.

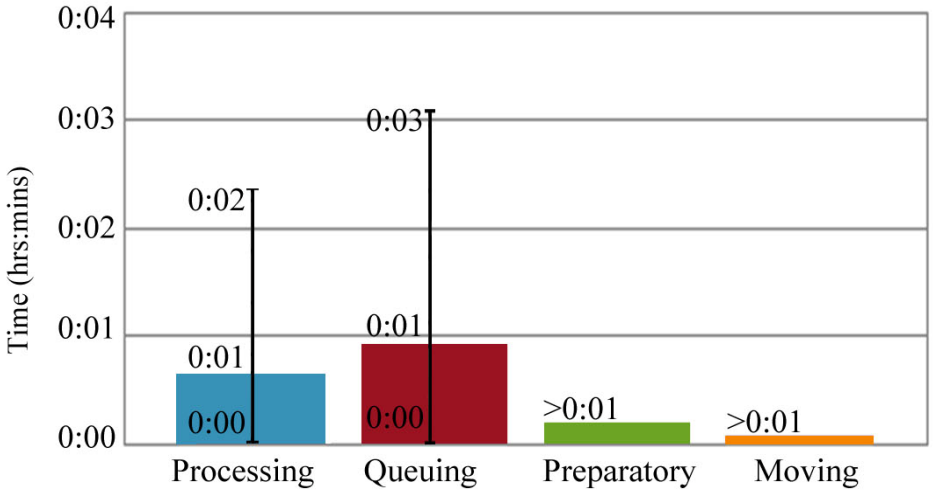

Figure 8.7: The average, maximum and minimum time spent undertaking activities associated with four TOPA groups at boarding

The greatest variation seen between the TOPA groups was with activities associated with Processing and Queuing (Figure 8.7). The average time spent undertaking processing activities was 1 minute, ranging from a few seconds to 2 minutes. The average time undertaking queuing activities was 1 minute, ranging from no queuing to 3 minutes. Activities associated with preparatory and moving groups were all under 1 minute. This shows that the greatest variation between the passengers time was in the TOPA groups of processing and queuing.

Table 8.6: Number of passengers undertaking the TOPA group activities at boarding

TOPA Group	No. of passengers
Processing	148
Queuing	137
Social	39
Preparatory	6
Entertainment	4
n=	148

Every passenger was observed undertaking processing activities. The majority of the passengers (93%) had to undertake queuing activities (Table 8.6). There was a low amount of preparatory activities observed at boarding, which is a similar result

to check-in (Section 8.4.1), and is likely due to the same factors of not being able to observe the queue and uncertainty of which group activities were associated with. However, as all the interactions between passengers and staff were quick, this implies that passengers must be ready for the interaction, otherwise interactions would be much longer as passengers get the information required for the boarding process.

8.5 STAFF INTERVIEWS

This section describes the results of the interviews with members of staff from the four domains. The purpose of these interviews was to obtain staff members' description of passenger interactions during their airport experience. The results concentrate on what problems passengers encountered during their experience, as perceived by the airport staff.

8.5.1 Check-in

Check-in staff only discussed processing, preparatory and queuing taxonomic groups when discussing the passenger experience in the interviews. Staff identified the main problem passengers face are long queues at check-in. Long queuing was attributed to passengers not being ready for the processing interaction when they arrive at the check-in desk (Figure 8.8). If passengers were not prepared, check-in staff would have to take longer processing each passenger or group of passengers, meaning other passengers would need to queue for longer. The lack of preparation by passengers was not attributed to a lack of information on what to prepare, as this can be acquired from the airline websites and is provided in a passenger's itinerary. The problem was attributed partly to the large amount of information provided. It was felt that few passengers would take the time to read a large amount of information.

> *"I know not being informed of the correct information can play a big role in delays and line queues."*

Figure 8.8: Check-in staff member discussing how a lack of preparation affects queuing

Staff believed that the best method of reducing queuing is to make passengers aware of what they need to do at check-in. This prior knowledge of the check-in process would reduce the interaction time with staff, resulting in more passengers

processed in a shorter period of time. Experienced passengers were discussed as an example of how passengers who were aware of what was expected of them were processed quickly (Figure 8.9).

> *"Generally [passengers being informed] just makes the airport run so much smoother. Experienced passengers know what they are doing and it helps a great deal."*

Figure 8.9: Check-in staff member discussing how the preparation of passengers improves processing

Staff discussed how by pro-actively informing passengers while they are queuing makes their interactions with passengers more efficient and shorter. Pro-actively informing passengers involves promoting what this project has termed preparatory activities; a member of the airline staff "combs" the queue, informing passengers of what documents they need to prepare, and telling them about the need to fill out their OPC.

Check-in was regarded by staff to play an important part in preparing passengers for the rest of the airport experience. It was considered an important location at which to provide passengers with information on the upcoming processing steps at security, customs and boarding. It is important that passengers are given this information to assist efficient processing at these future domains.

Effective communication with passengers was regarded as the greatest promoter of preparatory activities. Staff referenced three main methods of effective communication: (i) face-to-face communication at the airport (*n=5*), (ii) simplified information (*n=3*), and (iii) communicating prior to the airport experience (*n=2*). While communicating with the passenger before check-in was seen as important, those interviewed were unsure about how well this is currently done.

8.5.2 Security

Security staff discussed processing, preparatory and queuing taxonomic groups in their interviews. The greatest problems that security staff members consider passengers encounter are queuing, and not being prepared for the security process. Again, they believed that the lack of preparation resulted in longer queues. The lack of preparation was not considered to be due to a lack of information at the airport, as this was abundant. Preparatory information is provided when passengers book their

tickets, when they receive their tickets, as they enter the airport, and throughout the airport experience. However, what is considered lacking is effective communication between the airport and the passengers. Ineffective communication was considered to be caused by: (i) complicated language/legal terms/jargon (*n=5*), (ii) providing of too much information (*n=3*), and (iii) worldwide differences in airport security laws (*n=2*).

Every staff member used Liquids, Aerosols and Gels (LAGs) as an example of these communication problems. The term 'LAGs' is used throughout the airport industry, but staff members said it would mean little to passengers; they would not make the connection between the term and many of the products they carried. This included, for example, not realising that water, lipstick, and lip balm are LAGs. A more efficient communication method used by security staff members was to use terms that passengers would understand (Figure 8.10).

> *"But like I said if I say toiletry, cosmetics, and maybe name a few things, you know your toothpaste, lipsticks then people seem to get that a lot better than the LAGs."*

Figure 8.10: Security staff member discussing how to better communicate LAGs to passengers

Three suggested methods of communication that would allow passengers to better understand security rules and procedures were: (i) using simple language (*n=5*), (ii) face-to-face communication at the airport (*n=5*), and (iii) communicating before the airport experience (*n=2*). Communicating preparatory activities before the passenger reaches the airport has previously been done through TV advertisements and staff members considered this to have greatly reduced the problems encountered at security. Since these advertisements stopped, however, the problems with LAGs have increased.

Once the passenger is at the airport, face-to-face communication is considered the best form of communication for novice passengers. However, the experience and prior knowledge of frequent travellers can also be a cause of problems if the security process changes. Security staff considered that communication of the information should also come from the check-in staff and landside retail staff to ensure that passengers know if what they are carrying will pass through the current LAG laws.

Therefore, better communication among the various airport stakeholders is considered vital for efficient processing of passengers at security.

8.5.3 Customs

Customs staff discussed processing, preparatory, entertainment, and queuing taxonomic groups in their interviews. They considered long queues and the lack of passenger preparation as the most significant issues at Customs. Every staff member cited the OPC as a preparatory problem. Customs staff discussed their reliance on the two previous domains to inform passengers of the need to fill out their OPCs.

One method identified by customs staff that is employed at Brisbane Airport to increase the passengers' preparatory activities is the use of airport ambassadors. These ambassadors are volunteers who are distributed throughout the airport. Passengers can approach the ambassadors and ask them questions about the airport and its processes. The ambassadors also actively approach passengers to inform them of processes they need to complete. Customs staff regarded the ambassadors as vital to faster and more efficient processing of passengers, as passengers were more prepared as a result of their assistance (Figure 8.11).

> *"And you know, [the ambassadors] keep watching the queues and make sure people have got their cards filled out and you do notice a considerable drop in the number of people who turn up without cards, when [the ambassadors] are working."*

Figure 8.11: Customs staff member discussing how ambassadors improve the customs process

The reason customs gave for a lack of preparation was also due to poor communication. Yet again, poor communication was not due to a lack of information. Rather, customs staff considered there to be too much available information; passengers do not often read this information and it is, therefore, an ineffective form of communication. Factors contributing to effective communication in the customs domain were considered to be: (i) face-to-face mode (*n=7*), (ii) use of simple language (*n=7*), (iii), previous experience of the customs process (*n=5*) and (iv) provision of video information (*n=2*).

8.5.4 Boarding

Boarding staff discussed processing, preparatory, social and queuing taxonomic groups in their interviews. They considered boarding to have few problems associated with processing at this domain. This was attributed to passengers being prepared; as before arriving at this domain, they had numerous face-to-face interactions with staff and have been through enough domains to understand what is going on, and what is expected of them (Figure 8.12).

> *"[Passengers] have kind of come through the airport motion, kind of thing, and they are all kind of ready and going we are getting on the plane now, here we go. And whereas at check-in they are .... still a bit unsure where to go, they are not sure what is happening...."*

Figure 8.12: Airline staff member discussing why the boarding process has fewer problems

The problems discussed by airline staff were associated with long queues, and passengers waiting for their group. The social activity of waiting for their group caused obstructions to other passengers moving through the boarding process to the plane.

8.6 DISCUSSION

The results of Field Study Two are now discussed and compared with the results from Field Study One. Two areas are focused on: (i) the similarities or differences between the two field studies, and (ii) a deeper understanding of the processing domains from the observations and retrospective interviews through the use of activities and the TOPA groups.

8.6.1 Field study comparisons

Results from Field Study Two concur with Field Study One results. Only one extra activity was observed during Field Study Two. This new activity was "running without luggage" and fits into the TOPA group of "moving". The reason this activity was not seen in Field Study One could be that all the passengers had left enough time to get through the airport experience without having to rush. However, it may have also been due to passengers not wanting to run while being videorecorded. It is also likely that there would be the additional activities of passengers "running with

luggage/trolley/pram"; however, these were not observed in this study. No additional taxonomic groups were required as a result of Field Study Two and this demonstrates that Field Study One was accurate in identifying the activities passengers undertake in their airport experience.

Field Study Two also confirmed the findings from Field Study One concerning which activities were most commonly undertaken by passengers. In both studies: (i) queuing was the most commonly observed activity at all domains; (ii) the second most common activity at check-in and boarding was interacting with staff; and (iii) at security, the second most common activity was walking without luggage, followed by repacking. The fact that almost all activities were observed in both field studies, and that their order of frequency was the same indicates that although passengers were aware that they were being recorded in Field Study One, this did not affect their activities. Passengers were not aware of the videorecording in Field Study Two.

Passengers were not observed to interact with any additional items in Field Study Two; rather, they were only observed to interact with members of staff, group members and their own technology (as in Field Study One). There were no observations of passengers interacting with technology owned by the airport. Both field studies show that there is no technology available for passengers to interact with during processing periods at the airports.

8.6.2 Taxonomic group perspective

The results from using TOPA in Field Study Two show that the main difference among passengers at check-in, security and boarding was the amount of time allocated to queuing and processing (Figure 8.3, Figure 8.5 and Figure 8.7 respectively). A similar result was found among the seventy-one passengers observed in Field Study One. However, as all passengers observed at each domain in Field Study Two were at the airport during the same time period, these differences are more comparable. Factors such as time of day, and how busy the airport was can be excluded. Queuing can be considered the most significant factor in determining the length of time passengers spent within a processing domain, and how long the passengers spend in processing overall. This is shown in the variation in times passengers spend queuing, and the difference in profiles of passengers. This is also

reflected in the interviews with members of staff; every staff member considered queuing as the greatest problem facing passengers at airports.

When asked about ways of improving passenger experience, processing and preparatory taxonomic groups were the main categories that staff discussed. Every improvement suggested was associated with passengers being more prepared for the domain. For example, check-in staff members all suggest that reducing queuing would lead to shorter processing time (Figure 8.8). However, only a small number of preparatory activities were observed by passengers at check-in, this could be explained by three reasons: (i) passengers prepared before they joined the queue; (ii) they could have undertaken preparatory activities while at the back of the queue; (iii) they did not carry out any preparatory activities. The first and second reasons cannot be confirmed by the research as it was difficult to observe the activities of passengers for the complete time in the queue. This is because the view was often obscured by other passengers in the queue. When the passengers' activities were visible few preparatory activities were observed in the queue. More unpacking and repacking activities were observed at the counter than when visible the queue. This would suggest that passengers were often not prepared for check-in as they needed to find items when directed by the check-in staff member. This is consistent with the activities passengers carried out in Field Study One; passengers who are not aware of the check-in procedure would prepare at the check-in desk as directed by the check-in member of staff. This is also consistent with what staff members said in their interviews; passengers would often be unprepared. Unprepared passengers increase interaction time, and thus, increase the overall processing time at check-in.

Security exhibited the highest number of observed passenger preparatory activities (Table 8.4). This preparatory activity occurred while passengers were queuing to get through the security process. Interestingly, passengers who failed to get through security on their first attempt often showed some preparatory activity; thus, the problem was not that they failed to prepare, but that they did not prepare correctly. However, why they failed to be cleared was not evident from the observations. Staff believed that the reason was that passengers do not fully understand the security rules, and in particular, they do not understand the rules surrounding LAGs. Passengers do not realise that many of their items are classified as LAGs resulting in passengers not being prepared for security, resulting in

increased processing time for those passengers, and long interactions between the security staff and individual passengers (Figure 8.4).

While customs was not observed during Field Study Two, similar problems to the other domains were discussed by customs staff. The lack of preparation and poor communication were the main problems, and staff considered that improvements in these two areas would increase passenger facilitation and overall experience.

Boarding registered a small number of preparatory activities. However, these were mostly observed during the queuing time. During this period, announcements were made by the airline for passengers to have "your tickets ready and your passport opened at the photo page". No passenger was observed to have a long interaction with any member of staff at boarding. This concurs with the findings of Field Study One, where no passenger encountered any problem with the boarding process. Airline staff agreed that, normally, few problems occurred at boarding and passengers were generally prepared for the boarding process. Staff attributed this to the fact that passengers had been through so much processing by this stage, that they were now prepared.

When the three domains are compared in terms of the information that needs to be passed between the passenger and staff member, then check-in has the most interaction. Passengers have to provide their passport and flight details, and are asked security questions. If passengers are prepared for this interaction by having this information ready, then the interaction will be brief. If not, they have to find the information while standing at the check-in domain, thus necessitating a longer interaction. If the airport could inform passengers what to prepare while queuing, they would not only contribute to more efficient processing, but would also providing passengers with something active to do, and thus reduce perceived queue time.

Boarding has potentially the second largest amount of information required to pass between the passenger and staff, with boarding pass and passport required to be provided. Passengers are generally prepared at this domain, due to many factors. In particular, passengers are prepared for the interaction due to all the information they have been provided with through the earlier airport experience. This shows that preparation works.

Security showed the greatest variation in the amount of interaction between passengers and staff. Passengers could get through security with minimal, or no, interaction with a member of staff. However, extended interactions with security staff members occurred when there was a passenger security issue, or when the passenger was ill-prepared. Therefore, better communication is required between the airport and the passenger to ensure the passenger prepares correctly. This will be addressed further in the next chapter.

8.7 SUMMARY

This chapter explained the objectives of Field Study Two and the method and procedures used to fulfil those objectives. Details of the conduct of the observations and interviews were presented. The study confirmed that the activity list developed in Field Study One included most of the activities that passengers undertake in order to get through the airport experience. Only one additional activity was observed, running without luggage, and this activity would fit into the moving group in the TOPA. There were no additional interactions observed in Field Study Two.

Results from both field studies confirmed that there was no difference in the activities observed – every domain had a comparable activity list. A similar activity profile was seen among the seventy-one passengers observed in Field Study One, and the four hundred and five passengers observed in Field Study Two. Field Study Two also confirmed that there was no airport technology available for passengers to use at any processing domain.

Preparatory activities were confirmed to be important to improving the processing experience, and were identified in the interviews with staff as vital ways to improve and expedite the process. Observations at security and check-in showed the difference in times taken when passengers were both prepared and unprepared. Processing and queuing were identified as the TOPA groups that had the greatest variability between passengers at every processing domain.

The next chapter provides discussion of the results of Field Study One and Two in the context of the existing literature. It also highlights the major findings of this research, focusing on how TOPA provides a novel understanding of the passenger experience.

Chapter 9. A new perspective on passenger experience

9.1 INTRODUCTION

This chapter integrates the findings from Field Study One and Field Study Two, and discusses them in relation to the relevant literature. The activities that all four hundred and seventy-six passengers carried out to get through the airport are considered. The Taxonomy of Passenger Activity (TOPA) that developed from the activities leads to an original view of the airport experience. The chapter considers how each TOPA group is applied to understanding the passenger experience, and shows it can be applied to improve the airport experience. This is followed by diagrams that capture the interactions observed in the two field studies. A Matrix of Passenger Activity (MOPA) is developed from these interactions, and this provides another way of understanding various interactions during the airport experience. The discussion of MOPA concludes the chapter.

9.2 THE CURRENT PERSPECTIVE OF PASSENGER EXPERIENCE

The previous research investigating passenger experience shows that it has focused predominantly on two activity groups only; benchmarking (Airport Council International, 2008), and questionnaires and interviews (Consumer Protection Group, 2009) concentrate on the processing and queuing activity groups. Direct observation also concentrates on these activity groups (Meyer & Schwager, 2007; Consumer Protection Group, 2009), however, it also partly considers the consumptive activity group (Torres et al., 2005; Castillo-Manzano, 2009). This (latter) research into the consumptive group considers the amount of money passengers spend during their discretionary time.

Figure 9.1 illustrates that the focus of previous research has concentrated on understanding passenger experience by measuring service delivery, predominantly through the criteria of queue time and processing time. Discretionary periods are largely unconsidered, with research focusing on how much money passengers spend at the retail outlets.

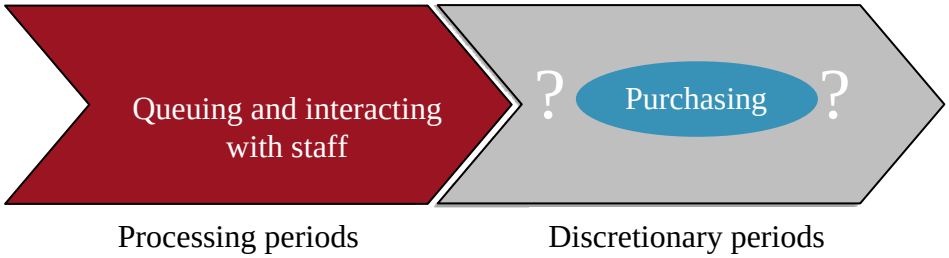

Figure 9.1: Current understanding of passenger experience

Queue time is continually discussed in airport literature as a key driver to satisfaction (Transportation Research Board of the National Academies, 2008; Consumer Protection Group, 2009). Thus, airport management strive to find ways to reduce the queuing time at each domain, which they assume will lead to an improved passenger experience. This is reflected in Field Study Two, when staff members at every domain identified queuing as a major issue when considering the passenger experience (Section 8.5). However, this research shows that queue time is not a key driver of satisfaction to a passenger (Section 7.4). It shows that although the time taken can have an impact on the experience, passengers tend to remember the ease, or how straightforward the process was.

Field Study One clearly demonstrates this: queuing was discussed positively on very few occasions by passengers, and only negatively when it took over thirty minutes to actually queue and be processed. They cited an easy and straightforward process as more important to their experience – a result replicated at every processing domain. This means that measuring the time passengers spend queuing is not an indicator of how good an experience is, and does not provide information to the airport to assist with improving the passenger experience. Thus, this research diminishes the importance of queuing time measurement (the focus of previous research), and illustrates why it is important to take a passenger focus in understanding the airport experience.

Yi (1989) and Spreng et al. (1996) underline the importance of expectations in understanding and improving customer experience in general. This has been confirmed in an airport situation (Norman, 2009; Harrison, Popovic, Kraal & Kleinschmidt, 2012). Passengers expect to queue at the various processing domains; passengers who experience shorter queue times did not discuss queuing more positively than those who queued for longer periods (with the exception being cases

where queuing time exceeded 30 minutes). Therefore, measuring the time taken to queue is an inadequate tool to improve the passenger experience.

Current measures of passenger experience, such as queue time, do not demonstrate an understanding of how passenger expectations are met or exceeded. This research, by contrast, takes a passenger focus . It identifies where passengers spend a significant portion of their discretionary time, thus showing what they deem to be important. It also shows where passengers have positive experiences; these being occasions where the airport has exceeded passenger expectations. This information about where passengers spend their time and their positive experiences can assist airports in improving the experience passengers have in the future.

9.3 A NEW PERSPECTIVE

This research shows that discretionary periods comprise the majority of the airport experience; and confirms Underhill's (2008) assessment that this is two thirds of the total experience. This research also shows that the airport experience is more than a divide between processing and discretionary periods. The activity-centred approach combines three levels of analysis. These range from macro to micro levels (and their contexts), and provide a novel understanding of the airport experience. This multi-level approach is proposed as a vital perspective in fully understanding and improving experiences (Gentile et al., 2007) and this thesis confirms this proposal. More specifically, in this case, the new multi-level perspective is supported by TOPA, which was developed as a result of the approach.

TOPA is composed of eight interacting activity groups. These groups provide a more detailed understanding of: what passengers do at an airport; how passengers are processed; how they spend their discretionary time; and where the airport can potentially improve the experience and efficiency.

The airport experience can be considered a complex interaction between the TOPA groups, rather than a linear progression from processing to discretionary periods, as illustrated in Figure 9.1. While queuing and processing activities remain important to the experience, what passengers do when they are not being processed is also important. Discretionary periods are no longer unknown – they consist of passengers carrying out consumptive, social, passive, preparatory, queuing and entertainment activities during their time at the airport.

Consideration now turns to how each of the eight TOPA groups contributes to passenger expectations, and how these expectations affect the experience. This allows a better understanding of the experience, and how each activity group could be used to support it. The first four groups considered are: processing, queuing, consumptive and moving. These groups have been previously researched (to varying degrees). The remaining four activity groups are subsequently considered: passive, entertainment, social and preparatory. The preparatory group is considered last as it has the greatest potential to both improve the passenger experience and processing efficiency, and this is ignored in previous research. This will be followed by illustrations of how the groups interact together.

9.3.1 Processing activity

The time taken to process passengers is an important measurement for airport management and is used in an attempt to improve the passenger experience. Processing periods have been shown to account for around one third of all the dwell-time at airports (Table 6.1). However, this research differs from previous research in what it considers to be the 'processing' part of the experience. Previous airport literature refers to 'processing' as the period of time from when passengers enter a processing domain until they leave it (Van Landeghem & Beuselinck, 2002; Rehbein AOS Airport Consulting, 2007; Transportation Research Board of the National Academies, 2008). In existing literature, therefore 'processing' includes both the processing and queuing activity groups developed in this research. This research considers the processing activity group separately, so as to understand what activities are important during the interaction between the domain staff member and the passenger. It shows that processing activities can affect whether a passenger has a positive or negative experience at each domain. It is the processing activity group that can improve or impair the passenger experience rather than queuing. The next section will discuss queuing activity, showing that as long as queuing is less than thirty minutes it has a neutral effect on their experience (Section 9.3.2).

Passengers discussed straightforward processing as positively influencing their experience; in other words, they do not expect it to be straightforward, and when it is, it exceeds their expectations. This confirms Caves and Pickard's (2001) finding that eliminating unknowns, and thus, making the experience straightforward, is important for a positive experience. Straightforward processing occurs when the

passenger is prepared for the interaction at a processing domain. For example, if a passenger has their passport and boarding card out, and their bags ready, they are processed without any problems. Knowing what to have ready for an interaction and, therefore, being prepared is a factor that improves the processing experience.

Negative aspects of processing mirror this result: passengers do not like unexpected occurrences. The unexpected occurs when passengers have little or no knowledge of what happens at a particular domain. An example of this is when passengers find out (for the first time) at the customs desk that they need to complete the Outgoing Passenger Card (OPC). The unexpected also occurs when procedures at a particular domain have changed. The security process, for example, changes regularly, depending on the level of terrorist activity around the world (Cox, Personal Communication, December 8, 2010). This results in a lack of knowledge of the current process and unprepared passengers; which, in turn, impairs processing. By providing passengers with preparatory knowledge (of what they need at particular domains) airports can improve processing activities. The preparatory activity group is considered further in Section 9.3.8, however there is a strong interaction between preparatory and processing, resulting in a positive experience (Figure 9.2).

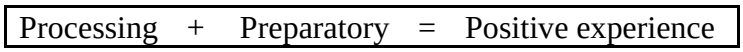

Figure 9.2: Processing and preparatory interaction resulting in a positive experience

It is suggested, in this and other studies (Koronowski, 2010), that reducing the interaction between passengers and staff members reduces the time spent processing passengers (Section 7.2). This is the assumption that is used to assert that self-service technology speeds up processing. However, check-in is an area where passengers receive vital information about how they should prepare for the security, customs and boarding domains. If this staff interaction with passengers is reduced, this opportunity to impart necessary information could be diminished or lost altogether. If check-in staff members concentrate on the check-in process only, this will result in passengers failing to receive vital preparatory information that improves processing at subsequent domains. Currently, check-in staff members inform passengers of the need to fill out the OPC, and on occasion security rules. If passengers are not made aware of these requirements at this point, it can add between four and eighteen

minutes to their time spent at customs or security causing bottle necks downstream (Section 6.5.2).

The above example illustrates that reducing the processing activities that are linked with preparatory activities can have negative impacts on both the passenger experience and processing efficiency (Figure 9.3). The current research perspective of the airport experience would not have highlighted this interaction as important. This is because preparatory activities have not previously been considered. The example also shows the importance of separating the processing activity group from the queuing activity group, and why reducing processing times at one domain can have negative flow-on effects at other domains.

Processing - Preparatory = Reduced efficiency

Figure 9.3: Processing and preparatory interaction resulting in reduced efficiency

The TOPA also shows the importance of social interactions with staff. Reducing processing activities can reduce the opportunities the airport has to improve the passenger experience through these interactions. Passengers positively discussed their short social interactions with staff members.

Processing + Social = Positive experience

Figure 9.4: Processing and social interaction resulting in a positive experience

These interactions thus have a positive effect on how passengers remember their processing experience (Figure 9.4). These are occasions where airports can exceed passenger expectations and provide a positive experience. However, if staff-members are told to keep these interactions short (to reduce the overall processing time), the airport will lose a simple means of improving the passenger experience.

9.3.2 Queuing activity

Queuing is considered simply as the time passengers spend waiting to be served by a staff member at an airport (Meyer & Schwager, 2007; Consumer Protection Group, 2009). Staff members at every domain referred to queuing as the greatest problem passengers face at the airport. However, this did not reflect the passengers' view of queuing. As described earlier (Section 7.4.2), unless queuing takes over thirty minutes, it is not important in passengers determining whether an

experience is either positive or negative; rather queuing was associated with neutral comments. If queuing was a major problem to passengers, it would be associated with a large number of negative comments. Only when there was no queue present at a domain did airports exceed passenger expectations (Table 9.1). However, a goal of 'no queuing' to exceed passenger expectation (leading to an improved experience), is not achievable.

Table 9.1 How the time spent queuing affects the passenger experience

Experience	**Positive**	**Neutral**	**Negative**
	No Queue	no queue to <30min	Over 30 min

Research into queuing shows that satisfaction depends more on the perceived queue time (Dawes & Rowley, 1996), rather than the actual queue time. Perceived queue time is the time passengers think they have spent queuing: this can be reduced by "optimising queue times". Dawes and Rowley (1996) consider two ways to achieve this: (i) provide information on actual queuing times, and (ii) use distractions.

Providing information on queue time allows passengers to have a greater control over whether they queue or not. For example, passengers were observed to monitor the queue length at boarding so as to decide whether to start their boarding processing activity (Section 6.5.2). Experienced passengers describe how they watch the boarding queue, and only when there is no queue, or the queue is small, do they join it. Therefore, by providing actual queue times to passengers, the airport would be supporting tactics that some passengers already use to improve their experience.

For security reasons, security and customs domains are required to be hidden from direct viewing from the landside. Therefore, queue monitoring was not observed at security or customs, as passengers cannot see the queue length until they actually enter these domains and cannot monitor the queue. However, providing real time queue information would allow a greater understanding of queue length in these domains, and would provide passengers greater control over their time of entry to these domains. This provision would also assist in processing, as fewer passengers would move to security when queues are long. However, it is still unclear if passengers would use this information at this point as they will still not be able to personally see and monitor the queue (as is the case at check-in).

Check-in and boarding provide an interesting comparison of why one area promotes this tactic of queue monitoring while the other does not. Check-in is the first domain passengers enter at the airport. Passengers are considered to be stressed on arrival at the airport, due to uncertainty (Lamacraft & Times, 1998), and the fact that they still have all processing domains to pass through. Until check-in, security and customs are completed, there is no guarantee that they will arrive at the departure gate on time for their flight. Once at the departure gate, however all processing activities (with the exception of boarding) are complete, and the passengers are assured of completing their goal of boarding the flight when the boarding call is made. Therefore, check-in and boarding provide examples of two areas where activities differ due to uncertainty. The uncertainty at security and customs is more similar to check-in than boarding, and could also result in passengers not using the queue information that airports would provide.

Uncertainty also arises at check-in because if the passenger does wait to join the queue, there is no guarantee that it will be smaller in size. At boarding, on the other hand, the queue will reduce in size until the airline calls more passengers to board. By providing real-time and future-time queue lengths at check-in airlines could potentially reduce the time passengers spend queuing. Future-time queue length would involve estimating how long the queue will be in five or ten minutes. This can be done by estimating how many passengers are still left to check-in. However, this could lead to inaccurate times being predicted. For example, if passengers are told the queue will reduce to a two-minute wait, and a large group arrives, then the queue length will increase above the predicted wait time. This would negatively impact the expectations of the passenger, leading to a negative view of check-in (which the measure itself is meant to counteract). Again, this could lead to passenger reluctance to use the information. Providing queue length information also comes at a substantial cost to the airport as it requires installation and maintenance of additional technology.

The alternative approach is reducing the perceived queue length by providing distractions to passengers (Dawes & Rowley, 1996). Providing interventions has been suggested before, but suggestions on how to implement this approach are not provided (Transportation Research Board of the National Academies, 2008). To fill this gap, this research shows how the TOPA can be used to provide practical

distractions that airports can easily introduce. By promoting or supporting preparatory, social and entertainment activities, the perceived time in the queue is reduced (Figure 9.5). For example, by informing passengers of up-coming processing steps, the airport, or airline, is both providing useful information and distracting the passenger.

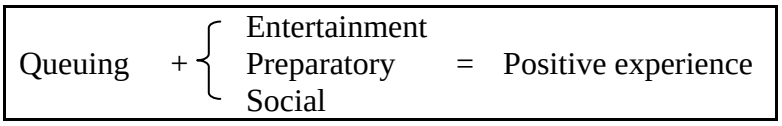

Figure 9.5: TOPA groups that interact with queuing resulting in a positive experience

This tactic also benefits the airport by reducing the time it takes to process the passenger downstream, as they are prepared for the various interactions. Preparatory, social and entertainment activities are considered in Sections 9.3.8, 9.3.7 and 9.3.6 respectively.

9.3.3 Consumptive activity

Consumptive activities are a vital source of airport income, accounting for half of all airport revenues (Graham, 2009). Previous available research on the consumptive taxonomic group has been limited and focused on purchases, or the amount of money spent by passengers at the airport (Livingstone et al., 2012). However, this purchasing activity accounts for only a few minutes of consumptive taxonomic group time, and is only one activity within the consumptive activity group. Figure 7.1 shows that there are eight activities that were previously ignored in research into consumptive activity, thus, a large part of the consumptive experience was previously unacknowledged. Consumptive activity research needs to focus on all activities associated with the consumptive taxonomic group to fully appreciate the experience.

During consumptive activities, passengers spent the greatest amount of time browsing, followed by interacting with companions. Both of these activities contribute to reducing the perceived time of passengers at airports. Reducing perceived time is shown to be extremely important to the passenger experience (Torres et al., 2005; Castillo-Manzano, 2009), both for the queuing activity group (Section 9.3.2), but also for the whole passenger airport experience. Therefore, to

improve the overall experience, each activity group should be considered in relation to how it contributes to reducing the perceived time.

Consumptive activity is important to the passenger experience, as many passengers were observed browsing for part of their discretionary periods. Most passengers browsed the various retail outlets throughout the airport, but not all made a purchase. This means that the previous research has ignored the broader consumptive activities of these passengers, as it only considered passengers who spent money. Airports can now consider the consumptive activity group as a way to improve the passenger experience. Improvements to the passenger experience can come from focusing on the passenger and considering the retail environments as a way to reduce the perceived time waiting for a flight, and as an important part of the passenger experience.

There is a link between social and consumptive activities. This is shown by passengers spending time interacting with their group while in the retail outlets, including discussing what products are available. Social interactions between passengers and staff were, similar to comments during processing interactions, shown to be important to a passenger's positive memory of their retail experience (Figure 9.6). Passengers positively discussed their short social interactions with retail staff-members, which had a positive effect on how passengers remembered their retail experience. These are occasions where airports can exceed passenger expectations and provide a positive experience. The retail interactions have the added benefit that the interactions do not increase processing time as they do not occur at the processing domains; rather they occur in discretionary periods.

Figure 9.6: Social and consumptive activities interaction resulting in a positive experience

One important aspect of the consumptive activities that appears to be missing in other consumptive research is the link between preparatory and consumptive activity groups. Passengers discussed that the majority (70%) of purchases made at the airports had some degree of pre-planning: either a purchase of some sort (not yet decided on) was planned, or the purchase of a specific time was planned (Table 6.7). Castillo-Manzano (2009) argue that as discretionary time increases, purchases also increases. However, this research suggests that there is not a simple relationship

between spending and discretionary time. It was found, rather, that spending is more likely to be related to what passengers had planned to spend, rather than to the amount of discretionary time available (Livingstone, Unpublished).

9.3.4 Moving activity

Previous research investigating how passengers move through the airport (which TOPA groups in the moving activity group) was discussed in Section 7.4.4. This previous research focuses on the initial design stage of building an airport to ensure the terminal meets international criteria of walking distance between domains (Kazda & Caves, 2007a). However, this research shows that the moving activity group influences which locations passengers visit.

Passengers are focused on moving from one processing domain to the next. This is illustrated by how passengers move during their discretionary periods. In the first discretionary period (the pre-check-in landside discretionary period), only four passengers spent more than four minutes in the terminal before proceeding to check-in (Section 6.5.2). Therefore, the majority of passengers (94%) go straight to check-in to get the first processing domain completed. Passengers then move towards the security area, and visit retail outlets on the route between check-in and security (Table 6.10). Cafes are visited most at Brisbane Airport; shops are visited most at Melbourne Airport; and equal numbers of passengers visit both kinds of retail outlets en route from check-in to international security. This difference between airports on the number of shops and cafes visited is not found during the airside discretionary period (Table 6.16).

The final piece of evidence that shows that the passengers' trajectory is from one processing domain to the next is that they rarely return to the retail area once at their boarding gate (Section 6.5.2). If their gate was in view of the retail area then passengers were observed, on occasion, to return to retail outlets. However, when the retail outlets were not in view of the departure gate, few returned to the retail area. This trajectory could be due to time constraints, which create uncertainty for the passenger who must check-in, go through security and customs, and locate their gate before they can board their flight. Thus, uncertainty has an influence on consumptive activities, as well as on queuing activity (Section 9.3.2).

The passenger trajectory illustrates an interaction between the moving, processing, queuing and consumptive activity groups. The location of the processing domains affect how the passenger moves around the airport and this, in turn, affects what locations they visit, including which retail outlets they enter. The length of time it takes to queue and be processed affects the amount of time remaining to undertake consumptive activities. Therefore, consumptive activity is greatly influenced by the processing, and moving activity groups (Figure 9.7). The influences of processing and moving activity groups on consumptive activities are most obvious on the landside area of the airport terminal. Any shops or cafes that are not on the trajectory between check-in and security are likely to have minimal passenger visitation.

Moving + Processing = Passenger trajectory + Consumptive

Figure 9.7: Processing and moving activities interaction affects the trajectory of passengers and consumptive activities

Recent research also shows that the social activity group also interacts with the moving and consumptive activity groups (Figure 9.8). Livingstone et al. (2012) shows that if passengers are accompanied by people who are not travelling, this affects where they spend time (consumptive and social activity groups) and where they move (moving activity group) on the landside. Again, this shows further interactions between activity groups.

Moving + Social = Passenger trajectory + Consumptive

Figure 9.8: Social and moving activities interaction affects the trajectory of passengers and consumptive activities

Airports have two options to make use of the interaction between moving and consumptive activities: (i) change the route passengers have to take between domains, or (ii) remove retail areas that are not en route between domains.

The first option involves altering the route between check-in and security. Passengers could be re-routed to pass more shops and cafes. This change should improve the visitation rate of passengers to the retail outlets. This design is used on the airside of Melbourne and Gold Coast Airports; passengers must walk through duty-free shops after they leave customs. This increases the number of passengers who visit the duty-free area (the visitation rate will be 100%). However, this research

shows that passengers pre-plan most of their purchases; therefore, ensuring that passengers pass more retail outlets may not necessarily increase the amount of money they spend. Also, increasing the distance between domains may lead to a greater chance of passengers becoming lost when moving (as seen with Passenger 47, Section 6.5.2).

The second option (removing retail areas that are not en route between domains) is currently being considered at Brisbane Airport (Kraus, Personal Communication, June 1, 2012). This research shows that the shops that are not on the route between check-in and security were visited by a few passengers only. As a result of understanding how the moving and consumptive activity groups interact airports can reassign these retail areas for other purposes. This would be extremely useful to airports as they are in constant need of more space, and better use of existing space to accommodate the growing numbers of passengers (Jager and Ofner, 2012 as cited in Harrison, 2012).

9.3.5 Passive activity

The passive taxonomic group is interesting as passengers associated it with both good and bad experiences. Negative comments referred to passive activity as being boring, and passengers needing more to do at the airport (Figure 6.15). Positive comments, on the other hand, referred to appreciating being able to sit and do nothing (Figure 6.14). Passengers who liked passive activity would actively seek out areas to engage in this activity. Thus, this activity group shows the diverse passenger expectations that airports need to support, ranging from sitting quietly and doing nothing to undertaking consumptive, entertainment or social activities.

Dawes and Rowley (1996) focus on improving the experience by controlling boredom, through providing a range of services to meet the needs of different kinds of passengers. While Dawes and Rowley's research suggests that they focus on the needs of passengers, their findings evolve from a management perspective of what passengers want. They consider that the backbone of the waiting experience is the range of services provided. The list of services considered in their research can be allocated to each of the groups from TOPA: Science Discovery Centre (entertainment); bars (social); shops (consumptive); and information counters (preparatory). However, what is missing from their list is an area in which to

undertake passive activities. The TOPA developed in this research shows that airports need to provide quiet areas for passengers who wish to sit quietly with no distractions, thus supporting their passive activities.

9.3.6 Entertainment activity

A limited amount of research concentrates on the passengers' experience of entertainment activity. This is despite the fact that this activity group has the greatest allocation of passenger time, and is, therefore, of most importance from a passenger focus. The entertainment activity that takes up the greatest amount of time is passengers interacting with their own technology: mobile phones, computers, tablet devices, and cameras. This activity represents a major change from activities observed a decade ago before the proliferation of personal technology (Norman, 2009). Passengers described using their own technology mostly for entertainment. However, it was also used for social and preparatory activities. It is not vital to know which activity group the use of personal technology falls into; what is important to know is: (i) using technology is important to passengers (as they spend so much of their time allocated to this activity), and (ii) there are links between technology use and social and preparatory activities.

The entertainment activity group was associated with the greatest number of negative comments due to the lack of entertainment facilities. The lack of easily accessible wireless internet (Wi-Fi) was the most common negative comment. Two of the airports used in the research did not have free wireless internet at the time the research was conducted, and passengers considered this a great source of frustration. However, passengers at the airport that did have free Wi-Fi did not discuss this as a positive aspect of their airport experience. This might be because today's passenger expects to have easily accessible Wi-Fi provided, and its availability was taken for granted and did not exceed their expectations. If airports do not directly ask how useful free internet access is to passengers, they will not understand how important it is to creating a positive airport experience. If airport management use the currently available measures to review what is important to a positive passenger experience, Wi-Fi service would be overlooked, as it would not be discussed by passengers. However, the TOPA illustrates the importance of Wi-Fi by revealing the large amount of time passengers spend using their own technology, and documenting the negative comments when Wi-Fi was not available.

Entertainment activities are an important means of reducing the perceived time passengers have at airports. They were also observed to be undertaken while passengers were queuing at the various domains, hence another example of distractions that reduce perceived queue time (Section 9.3.2). However, entertainment activities can lead to conflict between the passenger and staff members (Figure 9.9).

Entertainment + Queuing = Conflict at domains

Figure 9.9: Entertainment and queuing interaction resulting in conflicts at processing domains

For example, the use of mobile phones and recording devices is prohibited at security and customs, and it is unclear to staff members how strictly they should apply the rules. This will become even more confusing, as airlines are planning to use mobile applications on phones and tablets for "easier" processing (Australian Aviation, 2010; Flynn, 2012). The aim is to make the process paperless, and more convenient for passengers. While this will make the check-in process easier, it has the potential to cause conflict at security and customs. There is a need to resolve this conflict before mobile technology becomes more prevalent with passenger processing.

9.3.7 Social activity

Little research has been published on the social activities passengers undertake during their airport experience. The importance of this group is shown by the large amount of time passengers spend undertaking social activities, and the fact that passengers had no negative comments associated with it. The importance of social interactions at the processing domains is introduced in Section 9.3.1.

It has been previously discussed that social interactions could potentially be sacrificed to reduce processing time. For example, if there are no social conversations between passengers and staff members at check-in, passengers would be processed more quickly. For example, if a social interaction takes five seconds, almost forty-eight minutes can be saved on the overall processing and queuing time for the five hundred and eight-five passengers on a full A380.

By saving this time, however, the airport and airline are missing an opportunity to exceed passenger expectations, and to make a positive impression on a passenger

(Figure 9.4). On the other hand, during busy times at the various processing domains, saving seconds on each passenger is vital to reduce queues.

An alternative approach is to promote social interactions during discretionary periods or when queuing. This would allow staff to continue to provide a positive experience, even during the busiest times (Figure 9.6). For example, if passengers are approached by check-in staff while queuing, they can be informed what to have ready for their processing, as well as be engaged in a short social chat. This has three benefits: (i) it prepares the passenger for the processing interaction, thus speeding up processing times; (ii) it reduces the perceived time spent in the queue; and (iii) it provides social interaction, which passengers view positively.

Social	+	Processing	=	Bottlenecks

Figure 9.10: Processing and social interaction resulting in bottlenecks at processing domains

The social activity group does cause problems for airports (Figure 9.10). For example, passengers often wait for their group to reform between security and customs, causing obstructions and bottlenecks to the passenger flow (Kirk et al., 2012). The layout of these areas is currently not designed to allow this activity; they have been designed on the assumption that passengers move straight from security to customs. Problems with social activities are not confined to security and customs; boarding staff discussed this as the main problem there also. By understanding the social activity group, future areas could be designed to accommodate these activities, thus reducing their associated problems.

9.3.8 Preparatory activity

Preparatory activities are potentially the most important group arising from the taxonomy that can assist airports with improving processing efficiency and passenger experience. When passengers know what to do at a domain – whether through previous knowledge or prompting by staff – they prepare. This improves their experience as the process is simple and straightforward, and this simplicity was associated with positive comments at every domain.

Passenger preparedness has been mentioned by the International Air Transport Association (2010) when considering how to improve passenger experience. However, while they comment that “better awareness and preparation” would

improve the passenger experience (International Air Transport Association, 2010), they did not consider ways in which this could be achieved. The preparatory taxonomic group is not considered in the literature as a major source of improvement in processing. However, this research demonstrates that preparatory activities improve processing time (Figure 9.2); for example, there is a difference of between four and eight minutes of processing time between those passengers who complete, and those who fail to complete their OPC (Figure 6.13); there is a six minute processing time difference between those who prepare correctly and those who do not at security (Figure 8.4).

Preparation occurs when the passenger has the necessary knowledge to prepare for an upcoming processing domain. This comes from three sources: (i) the passenger's own past experience; (ii) the past experience of a member of their group; and (iii) information from a staff member. No passengers were observed to use any available reading material or signage to source this information. This corresponds with the opinions given by members of staff that passengers do not read the information available around the airport terminal (Section 8.5).

If airports want to promote preparatory activities to improve processing, they can only rely on information being passed from staff members to the passengers. There is no way for the airport to know what each passenger knows about the airport experience when they enter the terminal building. Examples of promoting preparatory activities are observed at some of the processing domains. Check-in staff members, for example, inform passengers of what they should prepare for domains downstream. However, staff at every domain reported a lack of consistency; not every passenger receives this information. This would happen during a peak period when staff members are attempting to reduce queue time by keeping interactions short, thus reducing the preparatory information passed to the passenger.

One airport employs ambassadors to provide passengers with information on airport-related matters. Information provided includes: where to go next; the location of a certain shop; or a passenger's departure gate number. The ambassadors are a recent addition to improving the passenger experience, and staff members at every domain now consider their contribution vital to the smoother running of the airport. For example, ambassadors are placed at the entrance to customs where passengers are approached to ensure they complete their OPC and open their passports to the

photo page. Customs staff members state that their job is noticeably easier when ambassadors are working.

Kirk et al. (2012) show how effective preparatory activities increase the efficiency at security. They recommend that a staff member engages passengers before they approach the x-ray machine. This allows passengers to ask questions about what items they need to remove from their person and bags, and thus undertake these preparatory activities. Preparatory activities take place away from the main queue of the x-ray queue, resulting in smaller queues, and more correctly prepared passengers. Promotion of preparatory activities result in two benefits: (i) in a reduction of average waiting times from 20 minutes to 3.9 minutes, and (ii) an increase in the number of passengers being processed, from 260 per hour to 340 per hour (Goodwin, Personal Communication, December 7, 2012).

Being prepared is shown to be important to the experience of passengers, both from a passenger's description and from the opinion of staff members. However, there are many examples of unprepared passengers. So what inhibits their preparation?

Staff members at all the domains agree that the reasons not all passengers prepare are: (i) the language used to explain the process is too complicated, (ii) too much information is provided, and (iii) passengers are not interested in preparing. The first two reasons concur with the observation results from Field study one, while the third does not. To promote preparatory activities, therefore, airports need to: (i) target the provision of information (thus reducing the amount of information); (ii) make their informative language simpler; and (iii) use the most effective forms of communication to deliver information. The most effective source of passenger information is shown to be direct conversation with staff. Therefore, if airports want to increase preparation they need to provide staff with the knowledge of how to inform passengers in simple and straightforward language throughout the airport environment.

9.4 INTERACTIONS BETWEEN TAXONOMIC GROUPS

Section 9.3 provides a new perspective on understanding the passenger experience and on how airports can improve this experience. Throughout the discussion of the TOPA, interactions were discussed: processing and preparatory

groups interacted, thus allowing more efficient processing; consumptive and social groups interacted, thus demonstrating how passengers choose items to buy; and moving, processing, consumptive and queuing groups interacted, thus providing an explanation for the trajectory of passengers through the airport terminal. The interactions are now compiled and illustrated in this section.

Interactions during processing periods

Interactions were observed to occur between the TOPA groups while passengers were in processing periods. These interactions between the various groups were observed to have both positive and negative effects on the processing periods. Figure 9.11 and Figure 9.12 present the observed positive and negative interactions respectively.

The majority of the interactions can have both the positive and negative affects on the experience. Whether the interaction is positive or negative depends on the contextit occurs. Preparatory interacts with processing and this can have a positive effect on the passenger experience and the processing efficiency (Figure 9.2). By preparing what items to get ready passengers are processed more quickly at every domain. This also results in straightforward processing, which improves the passenger's experience. The lack of preparation mirrors this result; increasing the time it takes to process passengers and increasing the uncertainty at the domains (Figure 9.3). This results in the passenger having a negative experience. By acknowledging the importance of preparatory activities airports could greatly improve processing efficiency and passenger experience.

The second interaction which is both positive and negative is between queuing and processing. Queuing can negatively affect processing if the queue time takes over 30 minutes, and can positively affect processing if the passenger does not have to queue (Table 9.1). However this interaction is over estimated in much of the airport literature. There is an assumption that reducing queue times will improve the

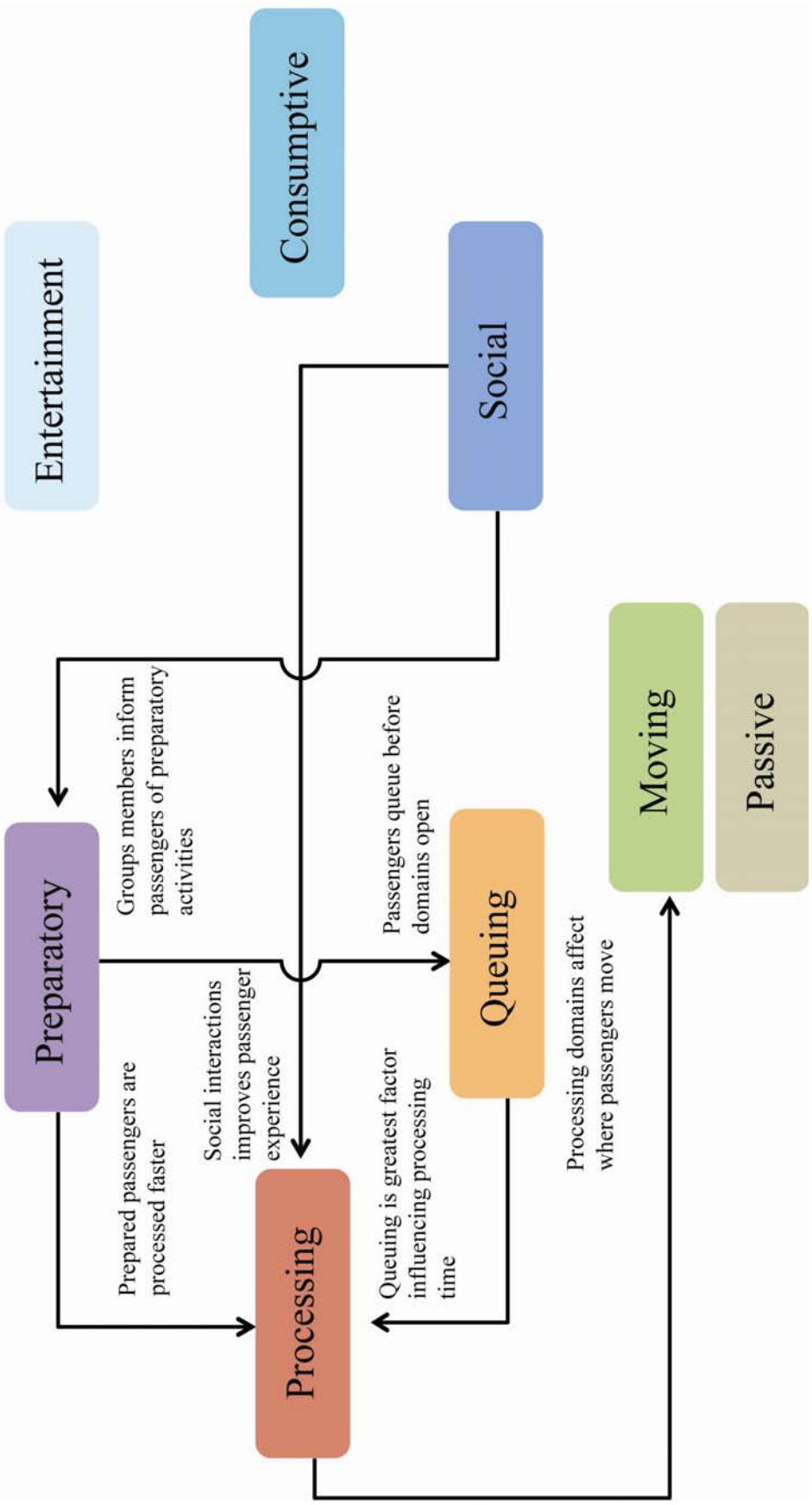

Figure 9.11 Positive interactions between TOPA groups during processing periods

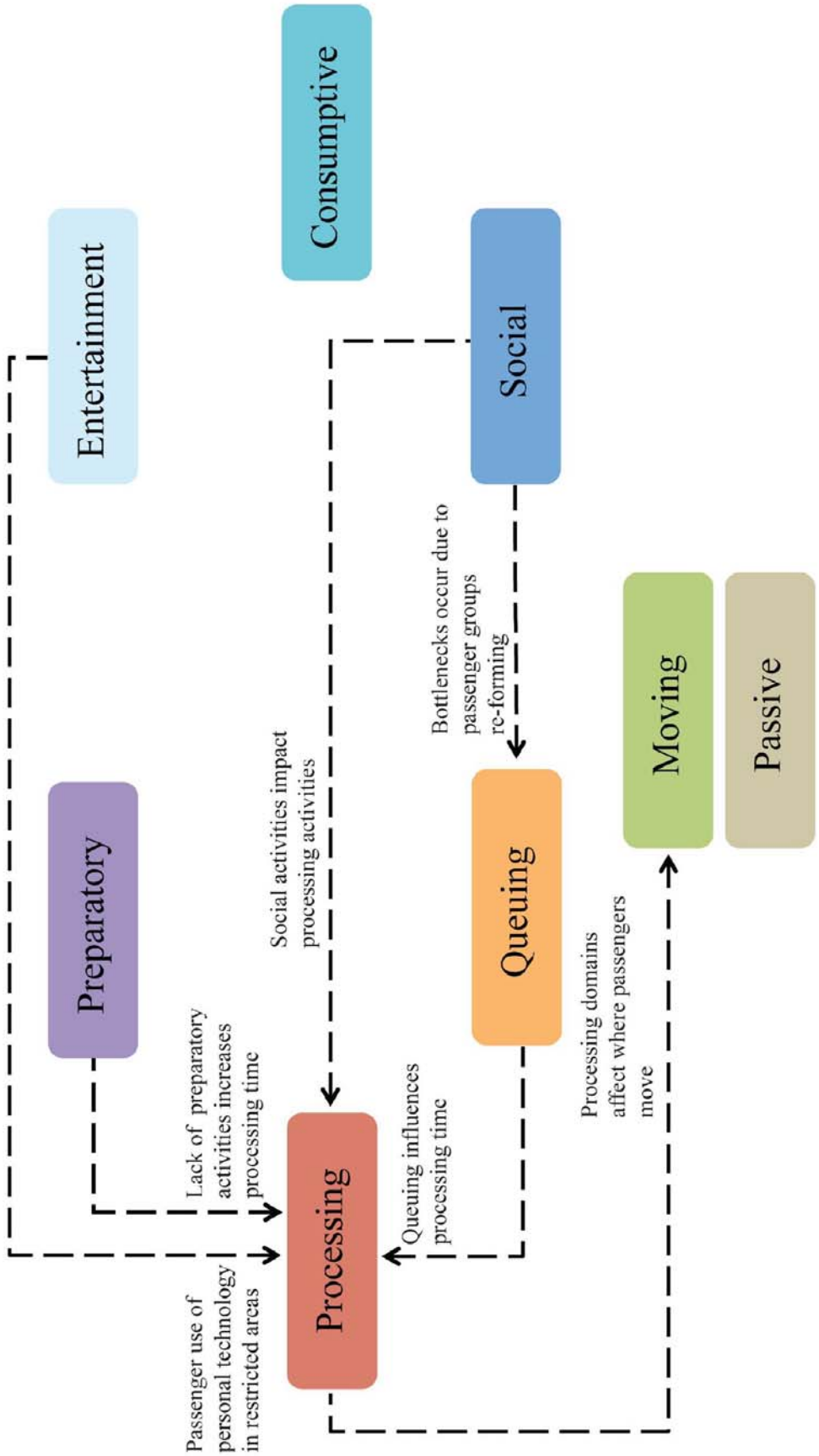

Figure 9.12 Negative interactions between TOPA groups during processing periods

experience. However this interaction between queuing and processing is not as influential on improving the experience.

The third interaction which has both positive and negative interactions on the passenger experience is how processing effects passenger trajectory through the airport terminal. Whether the interaction is positive or negative is more related to the views of the airport stakeholders, than that passengers themselves. Airports can use this interaction in the design of airport domains to ensure their terminal footprint is used optimally, reducing the amount of unused space allocated for passenger use. The social activity group interacts both positively and negatively with other activity groups. Social activities can have a positive interaction with preparation, as travelling companions can provide information to passengers on what to prepare. This can result in those passengers who were not informed by staff of what to prepare can, instead, be informed by their companions. Although this interaction is beneficial to the airport, they have limited control over this interaction, as it is hard for airports to know who is accompanying the passenger, and what knowledge those accompanying the passenger possess.

Social activities also have interactions that have both positive and negative implications to processing. When passengers are involved in social interactions this can distract them from what is going on around them, which can result in passengers not paying attention to what is happening in the queue, or what is happening during the processing interaction with members of staff (Figure 9.10). However if staff members interact and have a social interaction with the passenger during the processing interaction, passengers remember this as a positive experience (Figure 9.4)

The final interaction shown in Figure 9.12 occurs between the entertainment and processing activity groups. Passengers use the personal electronic technology in processing areas, such as security and customs (Figure 9.9). These areas currently have restrictions on the use of such technology, such as mobile phones and cameras. This interaction is one that requires further investigation by airports, as much of the innovation within airports is coming from the use of such personal technology.

Interactions during discretionary periods

Interactions were observed to occur between the TOPA groups while passengers were in discretionary periods. These interactions between the various groups were observed to have both positive and negative effects on the discretionary periods. Figure 9.13 and Figure 9.14 present the observed positive and negative interactions respectively.

Two interactions between the activity groups can be positive and negative, depending on the context of the interaction. Preparatory activities can occur during discretionary periods and this has a positive effect on the processing activity group. By preparing what items to get ready during the discretionary periods means passengers will be processed more quickly when they re-enter the processing period. This benefits the airport as passengers are choosing to do this in their own time.

What happens when passengers are not prepared has been discussed in the last section, and results in reducing processing efficiency and increasing uncertainty at the domains, and therefore passengers have a negative experience.

The other interaction which can have both positive and negative interactions is between social and consumptive (Figure 9.6). Social interactions can have a positive interaction on consumptive activities as passenger spending is related to who accompanies them (Livingstone et al., 2012). Passengers spend more money on the landside if they are accompanied by group members who are seeing them off on their trip (Figure 9.8). It is suggested by Livingstone et al that by providing areas on the landside of the airport that focus on promoting social activities could improve passenger experience.

Social activities can have a negative interaction with consumptive activities when they occur in retail areas and these social interactions block displays and access to products. However it is not clear how these interactions could be prevented, and if this would benefit the passenger experience. However it is important to recognise that such interactions occur. A similar interaction occurs with social and queuing, and passengers can be distracted while they queue and not notice what is going on around them. This was also observed during processing periods.

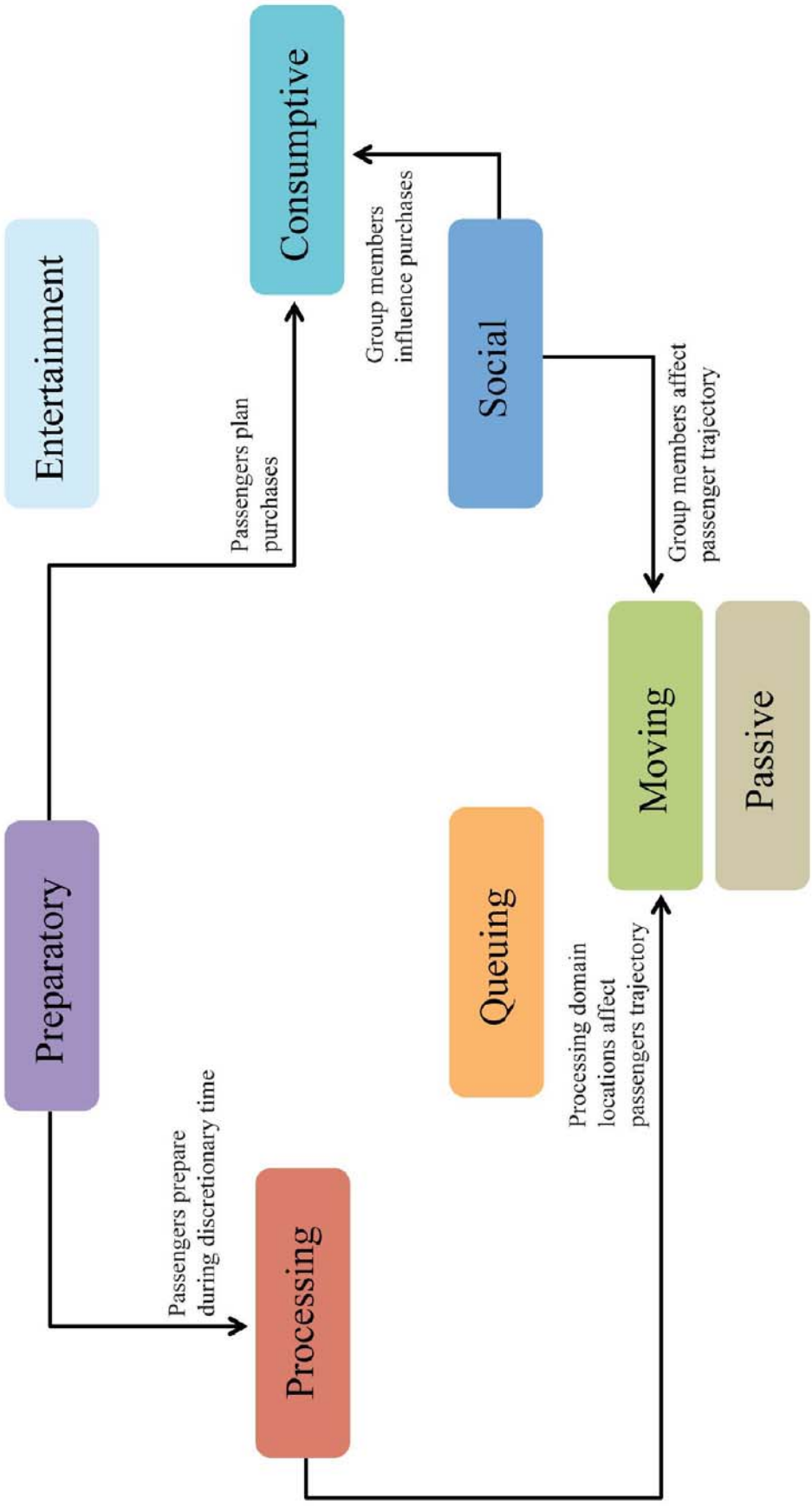

Figure 9.13 Positive interactions between TOPA groups during discretionary periods

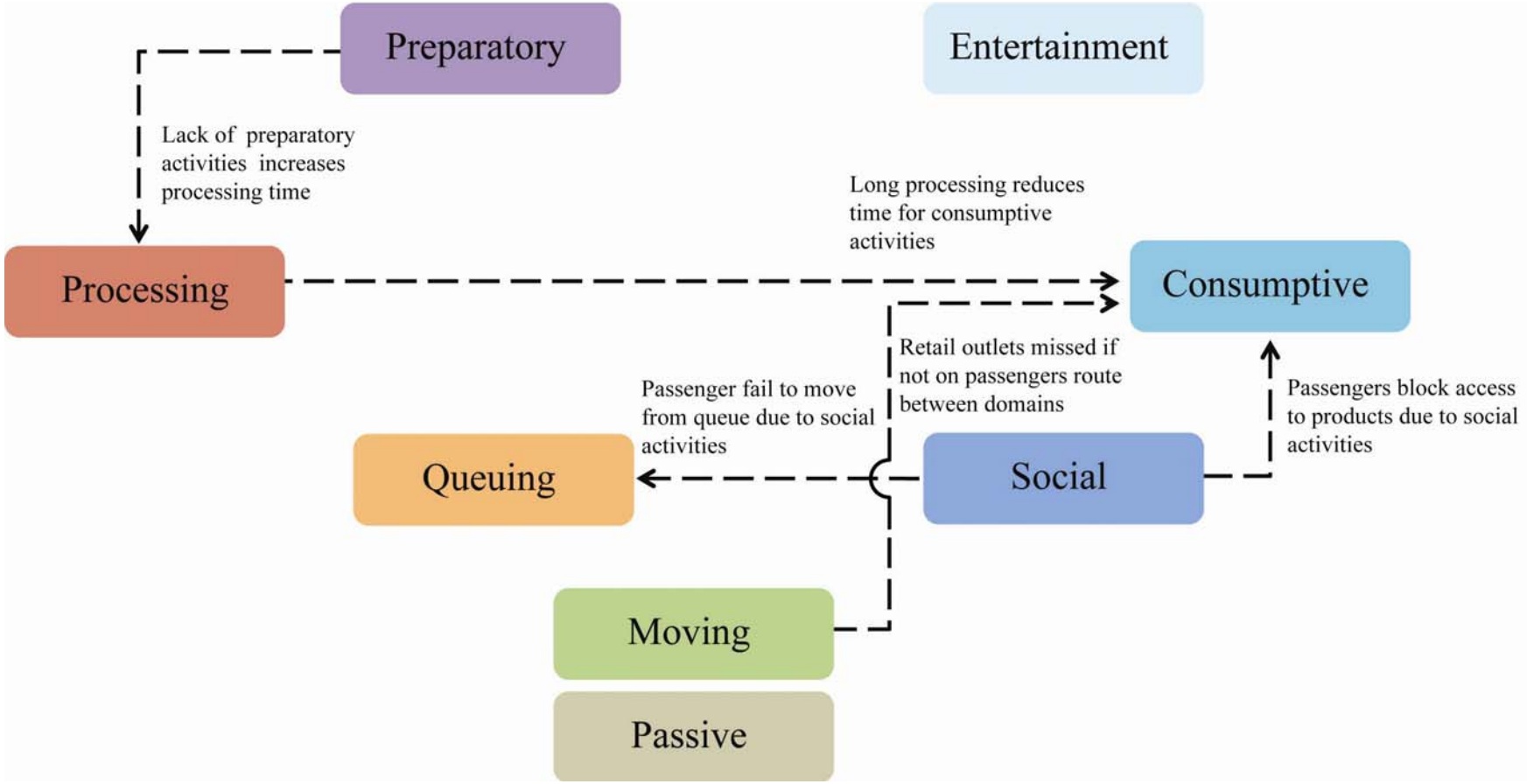

Figure 9.14 Negative interactions between TOPA groups during discretionary periods

Consumptive activities can also be affected by the moving and processing groups. As discussed above the location of the processing domains on the landside affects the trajectory of the passengers (Figure 9.7). This interaction does not appear in previous published literature, making it unclear if relationship between processing domains and retail locations has been used in planning the layout of these areas. The interaction between processing and consumptive activities is considered negative as this interaction has not been used. This means retail areas are missed by passengers as they are not designed to be on the passenger trajectory. However this interaction could be used to positively influence the experience in future design if it is incorporated in planning domain locations. Processing can also negatively influence consumptive activities when processing periods take a long time. This results in shorter discretionary time available for passenger to spend undertaking consumptive activities.

When passengers prepare during the discretionary periods, interactions can also occur with consumptive activities. For example passengers can purchase food or drink to consume while they complete their outgoing passenger card. This allows the passenger to undertake preparatory activities while relaxing with a coffee. This benefits the airport in two ways: (i) passengers are preparing of an upcoming domain and so should be processed faster, and (ii) passengers are spending money while preparing. Preparation is also seen in how passengers plan their consumptive activities. This research and research by Livingstone (Livingstone, Unpublished) shows that the majority of purchases during the airport experience are pre-planned and this interaction could be incorporated to improve how airports communicate what is available for passengers to buy.

Figure 9.11, Figure 9.12, Figure 9.13 and Figure 9.14 provide one way to illustrate the interactions that exists between the TOPA groups. However a matrix of the interactions provides an alternative way to consider all the interactions and this will now be discussed.

9.5 MATRIX OF PASSENGER ACTIVITIES (MOPA)

The Matrix of Passenger Activity (MOPA) is developed from the interactions discussed in the previous sections and is another way to illustrate interactions (Figure 9.15). Every interaction observed in the two field studies is highlighted in green in

the table. For example, processing was observed to interact with queuing, consumptive, moving, social, entertaining and preparatory activity groups in the field studies and so is reflected in Figure 9.15. The passive group does not interact with any other group as it is when passengers do nothing, therefore by definition, this activity group cannot interact with other groups, which is also reflected in Figure 9.15.

Grey squares can be seen in the MOPA as the interactions were not fully researched in the field studies. For example, when passengers were undertaking moving activities, the researcher was following, and so could not see the activities, other than walking, they were undertaking. This is also the reason the interactions between queuing and some other taxonomic groups appear grey (unknown) in the matrix. Further investigation is required to understand how passengers spend their time while queuing and moving.

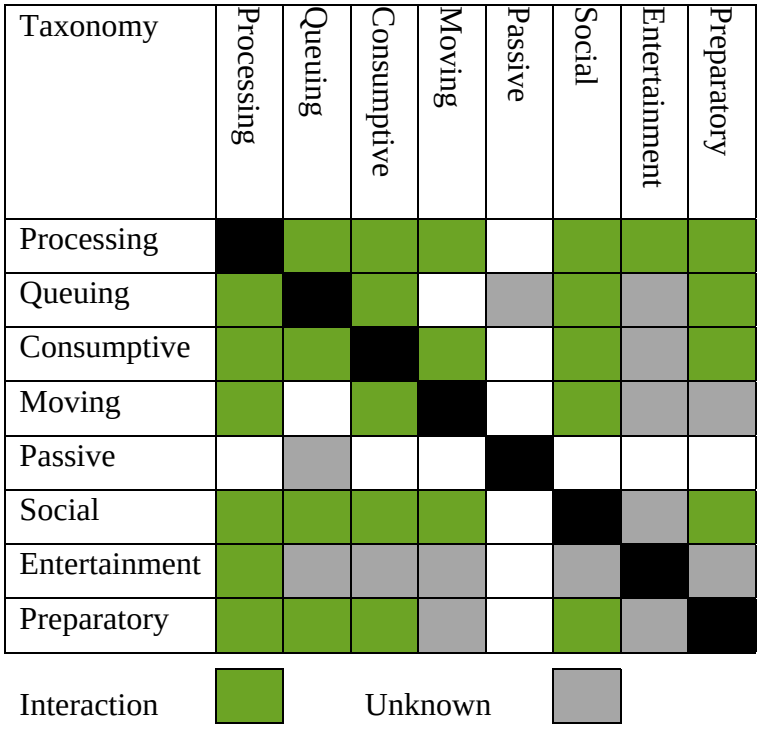

Figure 9.15 The Matrix of Passenger Activity (MOPA) showing interactions between the TOPA groups

The MOPA is a tool that can be used to understand the passenger experience. For example, an airport wants to understand how to improve the passengers' experience at retail outlets. This activity falls into the consumptive activity group. The MOPA shows that the consumptive group interacts with processing, queuing,

moving, social, and preparatory groups. Therefore, all of these groups should also be considered so as to obtain a full understanding of the passenger's retail experience. Social activities have been shown to improve the positive experience of passengers (Figure 9.13), thus, this could be one method to improve the consumptive experience. Passengers have also been shown to undertake preparatory activities during their retail experience in the form of pre-planning their spending. Targeting ways to make passengers aware of what is available at the airport's retail environment before the passenger arrives at the airport is likely to improve preparation by passengers. It also promotes the activity of preparation that passengers have been shown to normally undertake.

The MOPA can also be used for planning future design initiatives. For example, self-service technology is continually proposed as the way to improve passenger processing (Transportation Research Board of the National Academies, 2008; Consumer Protection Group, 2009; International Air Transport Association, 2009, 2010). The MOPA shows that the processing activity group interacts with social, preparatory and queuing activity groups. It is argued that technology will reduce queuing time, and so the literature addresses only one related activity group – queuing – and ignores these other related groups. The MOPA shows that social and preparatory groups should also be considered. By looking at the positive and negative interactions that exist between processing, social and preparatory groups an alternative perspective is provided on how self-service technology will affect the passenger experience (Figure 9.11 and Figure 9.12). Introducing technology will reduce the number of interactions with members of staff, and this will affect both the amount of social interaction, and the amount of preparatory interaction. Social interactions are identified as occasions where airports exceed passenger expectations, thus creating a positive experience. These will be lost with technology. Interactions with members of staff are also important in preparing passengers for future processing domains. These preparatory interactions are also likely to be lost with self-service technology. Thus the MOPA illustrates that while technology might remove some problems, it will not remove the need for "proposals for improving ... procedures" as claimed by the Consumer Protection Group (2009, p. 10). Technology may remove some problems, but add other problems for both the passenger and the airport. Previous research has not identified these problems areas.

9.6 SUMMARY

This chapter has detailed how the Taxonomy of Passenger Activities (TOPA) provides a novel perspective of the passenger experience. While only two of the eight activity groups were considered previously (Meyer & Schwager, 2007; Airport Council International, 2008; Consumer Protection Group, 2009), the importance of all eight groups, and their interactions, has been explored in this work to provide an original perspective on the passenger experience. The interactions that occur between the groups have been described and the ways in which airports can apply the TOPA to support and improve the passenger experience have been considered. Preparatory activities have been identified as particularly important to improving both the passenger experience and processing efficiency.

The interactions between the activity groups have been illustrated and presented in interaction figures (Figure 9.11, Figure 9.12, Figure 9.13 and Figure 9.14) and in the MOPA (Figure 9.15). The way in which MOPA can be applied to understanding the effects of design initiatives has also been sketched.

The next chapter discusses the key aspects of this research. The contribution to knowledge is documented, and the implications of the research outcomes are presented. The chapter concludes with a discussion of the limitations, and of possible directions for future work in the area.

Chapter 10. Conclusion

10.1 INTRODUCTION

This chapter discusses how this project has contributed to new knowledge of the passenger airport experience, while answering the research questions raised at the start of the thesis. The implications of this knowledge for the improvement of the passenger experience are discussed. The chapter concludes with an acknowledgement of the perceived limitations, and suggestions for possible future directions of this original research.

10.2 CONTRIBUTION TO KNOWLEDGE

The motivation for this research was to understand what passengers do during an airport experience, with a passenger focus. The difficulty with the previous perspective of the passenger experience is that it comes from what airport management deem as important to passengers. A gap in the understanding of the problems passengers face comes from the absence of a focus on the passenger. Many authors have stated that taking a passenger focus is how the experience can be better understood and will lead to improvements to the passenger experience (Kazda & Caves, 2000a; Caves & Pickard, 2001; Yeh & Kuo, 2003; Goetz & Graham, 2004; Fodness & Murray, 2007; Transportation Research Board of the National Academies, 2008).

The research questions developed from this gap in the knowledge of the passenger-centred view of the airport experience (Sections 4.3). In answering these questions, the research demonstrated the gap that exists between what is deemed important by airport management and by passengers of the experience.

The research shows that passengers undertake a wide range of activities to get through the whole departures airport experience. Previously, the understanding of the passenger experience was limited to the activities of queuing and interacting with staff at the four processing domains (Meyer & Schwager, 2007; Airport Council International, 2008; Consumer Protection Group, 2009). Discretionary periods were

largely unknown (Figure 9.1). Therefore, the majority of the passenger experience was not researched prior to this research project.

The Transportation Research Board of the National Academies (2008) suggests that a whole airport, passenger-focused perspective would provide innovative solutions to airport problems and procedures, and this research has validated this prediction. By taking this focus thirty different activities were identified, which were categorised into eight taxonomic activity groups that make up the TOPA. The primary contribution of this thesis has been the development of the Taxonomy of Passenger Activities (TOPA) and the interactions that occur between the groups, while also successfully answering the research questions raised at the beginning of the thesis (Section 5.3).

The TOPA confirms that the current focus developed from a management perspective is inadequate to improve the experience passengers have. The focus concentrates on reducing queuing and processing time to improve the passenger experience. The reduction of queuing and processing were shown in Chapters 6 and 8 not to be particularly important to passengers. When queuing or processing time was less than thirty minutes, there was no negative effect on passenger experience. A focus on queuing and processing time, therefore, will not contribute to a better passenger experience. This project has shown that this focus fails to improve the passenger experience.

The knowledge of the TOPA and its interactions considers the passenger experience in a different way to past research. It demonstrates how the activities passengers undertake work together to get them through the airport. It also shows which activities assisted in processing, which hindered processing, and which can be exploited to improve the experience passengers have in the future (Figure 9.11, Figure 9.12, Figure 9.13 and Figure 9.14).

The TOPA captures issues relevant to the experience with the focus on the passenger. It has shown how passengers can use their time between processing activities to prepare for future domains. Passengers were observed to prepare documents, such as their OPC, while sitting at a cafe and consuming food and beverages bought at the airport. Such preparation is beneficial to airport processing, as passengers do not delay other passengers while they attend to this at the

processing domains. Furthermore, when passengers prepare documents while sitting at a cafe and consuming food and beverages, they are linking preparatory activities with consumptive activities. This has the added benefit of increasing spending within the retail outlets and thus increasing airport revenue, while also improving processing efficiency and passenger experience. This is a "win-win" outcome for airports.

The introduction and use of technology is also promoted by the management perspective as a way of improving processing at airports (Transportation Research Board of the National Academies, 2008; International Air Transport Association, 2009). Research associated with self-service technology at airports does not appear to discuss any possible negative effects that may occur through its introduction. Instead the research only describes the improvements to the passenger experience. The TOPA and MOPA capture issues that challenge the assumption that there will be no negative effects on the passenger experience with self-service technology introduction.

The queuing group is the only TOPA group addressed in the previous literature that discusses self-service technology (International Air Transport Association, 2010; Koronowski, 2010) The MOPA shows that although queuing is involved with introducing changes to the processing, through self service technology, it is not the only group that should be considered. A change to processing also affects social, entertainment, preparatory and moving activity groups. For example, introducing self-service technology at check-in will reduce interactions with staff, resulting in the loss of the vital preparatory information needed for the domains downstream of check-in, namely security and customs. This, in turn, will increase processing times at these downstream domains as fewer passengers will be prepared for what is expected of them, previously gained through the preparatory interactions.

Results show that there was, on average, a difference of 6 minutes between prepared and unprepared passengers at security and at customs. If more passengers are unprepared for security and customs due to not being provided preparatory information at check-in, the benefits of making check-in self service will be lost and there may be significant delays when self-service becomes available. The TOPA identifies this problem before it occurs and so airports can contemplate ways to

inform passengers of how to prepare when interactions with check-in staff are removed.

Interactions with staff members also provide experiences that exceed passengers' expectations. Short social conversations at the check-in domain led to passengers associating that domain with a positive experience. These opportunities to improve a passenger's airport experience, therefore, will be lost with the addition of self-service technology.

The contributions to knowledge discussed above were achieved through the methodological approach used in the project. The observation of passengers, augmented with retrospective interviews, has been demonstrated to be a robust technique that provides a complete understanding of the airport experience with the focus on the passenger. More specifically, the observation of passengers and the coding of the various levels of activity (macro- to activity-levels [section 5.6]) have enabled this full understanding. This technique of applying a multi-level analysis to understand customer experience has been previously suggested in the literature (Gentile et al., 2007), but was not developed until the activity-centred approach was used by the author and his colleagues (Kraal et al., 2009; Popovic et al., 2009; Kirk et al., 2012; Livingstone et al., 2012). The activity-centred approach contributes significantly to an understanding of the customer-perspective, and can be applied to other airports. Although there are variations between airports world-wide the approach is focused on activities.. The activities necessary to get through the airport are similar, in that every international airport requires passenger to check-in, go through security and customs and then board their flight. While the procedures may vary, the activities a passenger needs to carry out to complete them are similar (Section 4.2.3). The approach provides a starting point to undertake a deeper understanding of the experience, which allows comparisons to occur to find the unique features of airports world-wide.

The approach can also be applied to other industries. It can be used to understand the customer experience in the entertainment industry. For example, many aspects of the airport are similar to the experience of customers of theatres. Theatre customers must arrive before a specific time, they often have time they need to fill before the show starts, and they must find their way through the building to

their seat. An activity-centred approach could be used to understand what is important to the theatre customers and how the experience could be improved.

10.3 IMPROVING THE PASSENGER EXPERIENCE

The TOPA provides a new perspective of the airport experience, and shows what is important to passengers. It highlights areas where airports can exceed passenger expectations. Preparation and social activities have been shown to be particularly important groups that airports can use to improve the experience. How the interactions between the TOPA groups lead to a better understanding of the experience and potential improvements to it will now be considered.

10.3.1 Promoting preparation and improving queuing activity

This research shows that passengers who prepare for a domain are more efficient in getting through (Section 9.3.8). Poor communication from the airport to the passengers was identified as the main reason that passengers are unprepared. Indeed, only one of the three sources of communication was useful for airports to promote preparation – interacting with members of staff (Section 9.3.8). Airports need to inform their staff how important these interactions are for efficient processing and queuing. This emphasis should be on how preparation expedites processing, reduces queue size, and also improves the experience passengers have. This information is not new to many staff members, who discussed passenger preparation in the interviews. What is new is the emphasis on how important preparatory activities are to the airport, including highlighting to staff the importance of discussing preparatory activities with every passenger possible. Airports need to move their focus from how quickly passengers can be processed, to the quality of the preparatory interactions among passengers and processing staff.

This research shows that preparation is not simply about preparing passengers for their current airport experience. Another source of knowledge passengers use is previous experience, and passenger preparation could be promoted throughout the departure experience. The airside discretionary period, for example, could become an important area where airports could inform passengers of the processes they underwent at each domain, and why they had to provide various documents. This would increase their knowledge of the various aspects of processing knowledge that will assist in preparation for future airport experiences.

10.3.2 Promoting preparation and improving consumptive activity

The TOPA also provides a new perspective on how airports should consider their retail activities. Passengers were shown to pre-plan almost 70% of all purchases. Airports should look at ways to advertise their retail outlets and products before passengers arrive at the terminal. By doing this they are supporting the preparatory activities passengers naturally undertake. Most importantly, from the airport's perspective, this pre-planning advertising could potentially increase the amount passengers spend when they are at the airport.

10.3.3 Improving communication for preparatory activity

Communication is a vital aspect in improving preparation (Section 10.3.1). Airport staff members view the current communication between the airport and passengers as a problem. The problem is not the lack of information provided to passengers as sufficient information is provided around the airport. The problem is that passengers read very little of it. The most efficient form of communication is shown to be face-to-face interaction between a member of staff and the passenger. This is because face-to-face communication employs simple language, and because passengers can get immediate clarification of any issues. For example, the rules that apply to Liquid Aerosol and Gels (LAGs) illustrate this simple language concept. "LAGs" is a governmental term that does not adequately describe, in simple English, what these items actually are. However, when security staff used the term "drinks, cosmetics, and toiletries" (Figure 8.10), passengers easily understood what they were.

To improve communication, airports need to consider the use of terms that passengers can easily relate to, rather than terms that are management focussed, and fail to convey the required information to passengers. However, this may not be as simple as it sounds, as airports sometimes have to use certain terms for legal and administrative reasons.

10.3.4 Promoting social interactions

Social interactions are very important to how passengers remember their time throughout their airport experience. In particular, if a social interaction occurred between a member of staff and the passenger, the passenger remembered this and discussed it in positive terms. Therefore, airports should highlight the importance of

short social interactions in improving the passenger experience. This interaction can also occur at retail environments, or when passengers are queuing at a domain. Interactions at these interfaces should be highlighted as times that staff can improve the experience passengers have and remember. This can be particularly important for staff to remember at busy times, when they do not think they have the time to partake in social chats. This research shows that passenger experience can be improved by these interactions without having to reduce the efficiency of processing.

10.4 RESEARCH IMPLICATIONS

Chapters 9 and 10 have considered the new focus on the passenger experience provided by the development of the TOPA. The TOPA provides ways in which airports can support and improve the passenger experience, and can assist in their consideration of future developments. TOPA implications for supporting the passenger experience are synthesised below.

Processing activity group

For this activity group, TOPA implies the need for airports to:

- Reduce the focus on measuring time taken for processing, and instead focus on how well passengers are prepared at a domain
- Promote preparatory activities at all processing domains
- Consider processing and queuing activity groups separately (this allows the interactions between passengers and staff to be elevated to a vital experiential factor, and not just a time measurement)

Queuing activity group

For this activity group, TOPA implies the need for airports to:

- Realise that queue time is not an adequate reflection of whether the experience of a passenger is positive or negative
- Use preparatory activities to reduce perceived queue time
- Consider queuing time as an opportunity to improve the airport experience through social and preparatory activities, rather than as a measurement of that experience

Moving activity group

For this activity group, TOPA implies the need for airports to:

- Consider the layout of processing domains on the landside; how this affects where passengers go; and, subsequently, how this affects their decision to visit certain retail outlets
- Consider the best time to inform passengers of their departure gate number (if their gate is some distance from the main retail area, this affects which retail outlets passengers visit during their time airside)

Passive activity group

For this activity group, TOPA implies the need for airports to:

- Design areas where passengers can sit passively, away from distractions

Entertainment activity group

For this activity group, TOPA implies the need for airports to:

- Provide passengers with the latest technology to support the use of personal technology for entertainment purposes (for example, passengers expect to be able to access free [or at least inexpensive] Wi-Fi)
- Consider how current regulations that prohibit the use of personal technology (which is now integral to all aspects of people's lives) at security and customs impacts passenger experience at these domains

Consumptive activity group

For this activity group, TOPA implies the need for airports to:

- Focus on promoting preparation for retail experience; investigate ways of promoting retail outlets to passengers before they arrive at the airport
- Consider shopping at retail outlets as a means of reducing the perceived time passengers spend at the airport, rather than simply as a source of revenue
- Recognise the importance of social interactions between retail staff and passengers in providing yet another opportunity for airports to exceed passenger expectations, thus, improving the passenger experience

Social activity group

For this activity group, TOPA implies the need for airports to:

- Highlight the importance of social interactions between staff members and passengers as simple ways to exceed passenger expectations and provide positive memories, hence improving the airport experience
- Design areas that allow groups to reform at security and boarding to reduce the problems currently associated with group re-formation at these domains

Preparatory activity group

For this activity group, TOPA implies the need for airports to:

- Inform all staff members how important preparation activities are to processing efficiency, and the passenger experience
- Inform and educate passengers as preparation for future trips to the airport (for example, while they are in their airside discretionary period, preparatory activities which have just been required of them at previous domains can be explained and reinforced)
- Simplify the informative language used at airports (for example, as the description of LAGs)
- Investigate new ways to inform passengers of preparatory activities after the future installation of self-service technology

10.5 RESEARCH LIMITATIONS

During the course of this research, two factors that could be perceived as limitations were highlighted. The activity-centred approach was used to minimise the potential influence of one of these. However, the second factor remains a limitation and needs to be addressed in further research.

The first perceived limitation of the research was that passengers were aware of being videorecorded throughout their airport experience in Field Study One (in accordance with QUT ethical standards, passengers were required to be informed of the videorecording). This had the potential to alter the activities passengers would normally undertake. However, results from Field Study Two confirmed the results

obtained from Field Study One. Furthermore passengers commented (during their retrospective interviews) that they often forgot they were being recorded. These two factors show that the knowledge of being recorded did not significantly change passenger activity.

The second limitation is that all passengers were able-bodied. Passengers who are in a wheel-chair, or have a physical impairment, such as blindness or deafness, would have a different experience, and encounter different problems. Further research is required to understand the experience of passengers with disabilities, and to determine ways in which airports could better support it.

10.6 FUTURE RESEARCH

While this research provides a novel perspective on the passenger experience at airports, and answers the research question of what passengers do during an airport experience, it also generates opportunities for further research.

10.6.1 Understanding the experience of passengers with special needs

Passengers who have special needs would have different experiences, and are required to undertake the same airport processing activities. This raises some pertinent questions. How would a passenger in a wheelchair be dealt with at the check-in counter which is often at a height that would make it difficult for them to communicate with a staff member?; and how would a blind passenger be able to navigate from check-in, to security and customs, and then to their boarding gate? Assistance can now be provided by personal contact with airport staff. When self-service technology is incorporated into airport processes, however, its effects on the service provided to passengers with special needs requires further consideration.

10.6.2 Understanding queuing and moving activities

More research should be conducted into how passengers spend their time while queuing and moving. The methodology used for this project did not allow analysis of what passengers did at these times because the research could not get the necessary video camera angle to obtain details of their activities.

Queuing is shown to take up much of the passengers' processing time, yet how this time is divided between the activity groups is not understood. Further research would be helpful to explore what activities increase and decrease perceived queuing

time. It could also investigate the best methods of communicating with passengers to ensure that they undertake preparatory activities while queuing.

10.6.3 Understanding consumptive activity

Consumptive activities are shown to be an important part of the passenger experience. They have also become vital to the profitability of airports (Graham, 2008). The passengers' consumptive experience is a complex one. Until recently, however, research into the consumptive activity group has simply concentrated on the aspect of how much passengers spend. The research documented here shows that the majority of purchases are pre-planned, and this new knowledge should affect how airports advertise their retail facilities. Recent research by Livingstone et al. (2012) also shows other factors affecting consumptive activities, such as who accompanies the passenger. Further research should be carried out to understand the complex nature of consumptive activities to ensure airports retain and increase the profitability of their retail environments.

10.6.4 Understanding the effects of technology

Technology is continually espoused in airport literature as the way to improve processing at airports (Consumer Protection Group, 2009; International Air Transport Association, 2009, 2010), and is considered the "Holy Grail" of improving the passenger experience. While there is currently no technology available to passengers for self-service processing at the international departure terminals at the three Australian airports used in this project, it will be gradually introduced over the coming years (Kraus, Personal Communication, July 19, 2009). The findings of this research can inform this introduction. The research shows, for example, how important staff interactions at the various domains are to the passenger experience and this could be compromised by self-service processing. The MOPA (Figure 9.15) also shows that there is a complex relationship among the activity groups, and these interactions should be considered to fully understand how technology might impact the experience.

This research explores the passenger experience before self-service technology has been provided for processing. How self-service technology changes this experience is important future research for airports. Further investigation will

explore: how technology is accepted; how it impacts on the importance of staff interaction; and how it alters current preparatory activities.

10.6.5 Developing TOPA group interactions

The taxonomic groups that have developed from this research are not separate entities; rather, they interact to varying degrees, depending on the context and location. This has been illustrated in Figure 9.11 to Figure 9.14 and in the MOPA (developed in Section 9.4). They provide initial models of how these taxonomic groups interact. Further research could explore detailed interactions and allow the development of the TOPA and MOPA into a database that can be more easily used to inform future airport design. More interactions exist between the TOPA groups and these can be developed from further research.

Potential positive interactions could come from using personal technology owned by many passengers. Personal technology could be used in the future to: inform passengers of what to prepare for processing domains; of what retail offers are available throughout the airport terminal; and could be used to reduce the perceived time passengers queue. Social interactions can also be used to increase the adoption of processing technology available at airports. Further research would need to occur to develop and confirm that these interactions would actually occur.

10.6.6 Understanding how groups affect the experience

The focus of this research was on the individual passenger, whether they were travelling alone, or if they were in a group. This focus was necessary to develop an initial understanding of the experience that has the focus on the passenger. TOPA has demonstrated that social interactions are important aspect to the experience. Future research should study the effect of groups on the experience. For example, how group members affect the consumptive activities of a passenger, or how they affect how passengers prepare themselves for processing domains.

10.7 CONCLUSION

The passenger experience is a complex interaction of necessary and voluntary activities. Until now, only a small amount of research has taken a passenger focus and investigated the complete airport experience, despite the fact that this focus has

been espoused in the literature for over a decade (Kazda & Caves, 2000a). The research documented here used empirical methods to collect data on the actual experience of passengers, thus filling this gap in the knowledge of passenger experience identified by many authors previously (Kazda & Caves, 2000a; Caves & Pickard, 2001; Yeh & Kuo, 2003; Goetz & Graham, 2004; Fodness & Murray, 2007; Transportation Research Board of the National Academies, 2008; Popovic et al., 2009).

Thirty activities were identified from the two field studies. The context and location of the activities allowed the development of the TOPA. The context was vital to the taxonomy development, and, in particular, to how the passengers described their experiences. Eight TOPA groups developed from this study, thus highlighting the limitations of previous research which focused mainly on two groups, namely processing and queuing. As processing and queuing only account for a third of a passengers' experience, how they spend the majority of their time was unknown until now. This knowledge of activities undertaken in passengers' discretionary time is a significant contribution to knowledge.

All eight activity groups need to be considered to fully understand the passenger experience. The Transportation Research Board of the National Academies (2008) suggests that taking a whole-of-airport passenger-centred focus would allow the development of innovative solutions to improve the passenger experience. This study demonstrates that this is so.

The research also shows that processing activities should not be viewed simply as interactions to facilitate passenger boarding, they are also important in preparing passengers for processing domains, and are opportunities for airports to exceed passengers' expectations. Short social interactions are shown to engender a positive view of the overall airport experience, and those interactions that involve preparing passengers are shown to increase the efficiency of passenger processing at domains downstream. Thus, the research shows that rather than simply looking at the time it takes to process passengers, airports should also consider how well staff socially interact with passengers, and how well the passenger is prepared.

Queuing has traditionally been considered as the time passengers spend in line waiting for a service. This study illustrates that queuing can be viewed as an

opportunity to both improve the passenger experience, and to prepare them for domains downstream. While social activities are also shown to improve the passenger experience, they can also negatively impact processing when passengers wait for their group to reform – thus impeding passenger flow. Entertainment activities positively influence the passenger experience, by reducing the perceived waiting time at the airport. However, passengers are prohibited from using electronic devices at security and customs. This causes conflict between the passenger and the domain staff – a negative experience that needs to be addressed. This also needs to be considered in light of the fact that airlines are increasingly using mobile technology for the processing of passengers.

Preparation is shown to be the most useful factor in improving the passenger experience, while also reducing the time it takes to process each passenger. While staff discussed the importance of preparation, there is no consistent approach to this preparation. Airports need to recognise the importance of preparatory activities, as highlighted in this study. While they do provide preparatory information on signs and in written material, passengers actually read very little of this information. Therefore, airports need to focus on how passengers acquire preparatory information, that is, through previous experience, or interactions with staff. Airports cannot know what knowledge passengers have as they enter the terminal, therefore, they must rely on interactions between staff and passengers as the main method of promoting preparatory activities.

This research identifies areas where airports can improve the experience of passengers. The taxonomy of passenger activities allows airports to incorporate simple and inexpensive changes that can assist in improving passenger processing and experience. The MOPA allows a better understanding of how a change in one activity group will affect others. Further development of TOPA and a more comprehensive MOPA will allow better understanding of the passenger experience. This will also have a significant impact on the design of future airports world-wide.

The observation of the passengers, augmented with retrospective interviews, proves to be a robust technique which enabled a full understanding of the airport experience from a passenger-focus. The activity-centred approach contributed significantly to how the passenger airport experience is understood. The approach

answered all research questions which were raised as a result of gaps in the available knowledge of the airport experience.

This research is significant in understanding the passenger experience, as it has explored the entire experience with a passenger focus. It details how passengers spend their discretionary periods; an area of research which was previously overlooked. The passenger focus provides: (i) a list of passenger activities, (ii) the TOPA, and (iii) the MOPA. The list of activities permitted the development of the TOPA which provides a taxonomy of activities that can be used to understand the passenger experience, including how future changes to the airport may affect the passenger experience. Combining the TOPA and MOPA allows an understanding of which activity groups must be considered when attempting to alter areas of the passenger airport experience.

This holistic approach to the passenger airport departure experience provides a more in-depth understanding of the experience than previously available. It will ultimately provide a greater awareness of the passenger and how the passenger experience can be better supported through informing the future design of airports.

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Appendices

Appendix A

Passenger consent form

CONSENT FORM for QUT RESEARCH PROJECT

Research Team Contacts

Philip James Kirk – PhD Candidate
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Passenger experience at an airport: An activity-centred approach

Statement of consent

By signing below, you are indicating that you:

- have read and understood the information document regarding this project
- have had any questions answered to your satisfaction
- understand that if you have any additional questions you can contact the research team
- understand that you are free to withdraw at any time, without comment or penalty
- understand that you can contact the Research Ethics Officer on +61 7 3138 5123 or ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project
- understand that the project will include audio and/or video recording
- agree to participate in the project

Name _____

Signature _____

Date _____ / _____ / _____

Use of Video Footage

We would like to illustrate some interesting aspects of the passenger experience by using video or still images of the project. By ticking yes, it means your still image, or video image may be used in future discussions on the project. If you tick no your image will not be used in future discussions, and will only be seen by the team specified above.

☐ Yes, you may use my video image and/or the video images of my group in discussions of the project

☐ No, I do not wish my video image to be used

From time to time, we may like to promote our research to the general public through, for example, newspaper articles. Would you be willing to be contacted by QUT Media and Communications for possible inclusion in such stories? By ticking this box, it only means you are choosing to be contacted – you can still decide at the time not to be involved in any promotions.

☐ Yes, you may contact me about inclusion in promotions

☐ No, I do not wish to be contacted about inclusion in promotions

Staff consent form

CONSENT FORM for QUT RESEARCH PROJECT

Research Team Contacts

Philip James Kirk – PhD Candidate
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Passenger experience at an airport: An activity-centred approach

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Signature _____

Date _____ / _____ / _____

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☐ Yes, you may contact me about inclusion in promotions

☐ No, I do not wish to be contacted about inclusion in promotions

Appendix B

Project description for passengers

Queensland University of Technology
Brisbane Australia

PARTICIPATE IN RESEARCH
Information for Prospective Participants

The following research activity has been reviewed via QUT arrangements for the conduct of research involving human participation.
If you choose to participate, you will be provided with more detailed participant information, including who you can contact if you have any concerns.

Passenger experience at an airport: An activity-centred approach

Research Team Contacts

Philip James Kirk – PhD Candidate
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Please contact the researcher team members to have any questions answered or if you require further information about the project.

What is the purpose of the research?

The purpose of this project is to investigate passenger experience at airports. The study will look at how passengers actually use the airport, where they spend their time, and what they interact with. It is expected that the results will generate new knowledge about passenger experience, and will facilitate airports in designing a more user-friendly experience for passengers.

Who is funding this research?

The project is funded by the Australian Research Council (ARC). The funding body will not have access to personally identifying information about you that may be obtained during the project.

Are you looking for people like me?

The research team is looking for people who use airports. We are looking for all types of users of the airport, including families, individuals, friends, and couples of all ages and backgrounds. We also want people travelling for both business and pleasure.

What will you ask me to do?

Your participation will involve answering some questions on your perception of your upcoming airport experience. This will involve an interview on your perception of airports and upcoming trip. It will require approximately 30 minutes of your time This will be approximately a month before your date of travel. We will then follow you through your airport experience on the day of departure, at a discrete distance. This will not impede you trip through the airport, or delay you in anyway. Once you arrive at the airport the researcher will greet you and then you will continue on your normal airport experience. Your journey will be recorded on video. This footage will not be viewed by anyone outside of the above research team without your written permission. We may contact you after your return from your trip to get your thoughts on your departure experience and, where necessary, go through events with you to see what could have been done to improve your experience. If you are not returning to Brisbane we will contact you by phone and ask you to view a video clip of your experience at Brisbane Airport on a secure non-public YouTube site.

Are there any risks for me in taking part?

There are no risks beyond normal day-to-day living associate with this project. It should be noted that if you do agree to participate you can withdraw from participation at any time during the project without comment or penalty.

Are there any benefits for me in taking part?

It is expected that this project will not benefit you directly. However, it may benefit you in future airport travel when we report our findings back to the airport. We will make recommendations on how to improve the passenger experience, which we hope airports throughout Australia will adopt, leading to a better passenger experience.

I am interested – what should I do next?

If you would like to participate in this study, please contact Philip Kirk for details of the next step.

You will be provided with further information to ensure that your decision and consent to participate is fully informed.

Thank You!

Office Use Only
RM Reference Number:

Appendix C

Script for retrospective interview

Post-travel Interview (approx 30 min's)

We would like to find out what you remember from your time at Departures, Brisbane International Airport.

Information

- Name
- Destination
- Date of travel
- Frequency of travel

Question 1: What did you think about your experience at Brisbane International Airport?

Question 2: Did you have to do anything you did not expect during your experience?

Question 3: CLIP 1(00:02:40) – Please watch clip 1. Why did you .....

Question 4: CLIP 2 (00:12:18) – Please watch clip 2. Why did you .....

Question 5: CLIP 3 (00:16:01) – Please watch clip 3: Why did you .....

Question 6: CLIP 4 (27:20) – Please watch clip 4: Why did you .....

Question 7: CLIP 5 (01:34:50) - Please watch clip 5: Why did you .....

Question 8: Do you have any other comments, or thoughts, on your airport experience?

Appendix D

Email to passenger for retrospective interview

Dear..

Thank you for assisting in my post-travel interview. The interview will take place in the next 10/15 minutes. I will ask you to open each clip in turn and discuss the experience. Please find the links below and click on each when I ask you to

Clip 1 = http://www.youtube.com/watch?v=c8i6eF67lkc

Clip 2 = http://www.youtube.com/watch?v=2q7tcCQVcLU

Clip 3 = http://www.youtube.com/watch?v=s-2VU5K7Jiw

Clip 4 = http://www.youtube.com/watch?v=lW6wtlSht5Y

Clip 5 = http://www.youtube.com/watch?v=rUv1hGHAWk8

Clip 6 = http://www.youtube.com/watch?v=Vnq3vHDukIc

Please note no one else can see these videos and they will be deleted once our interview finishes.

Thanks

Appendix E

Observation data coding scheme

Code	Definition	Field Study
Marco Experience		
Processing	Periods associated with necessary tasks to get through the airport procedures as required by airport rules	One
Discretionary	Periods associated with non-processing times. Chosen by the passenger.	One
Location Level		
Check-in	Area around the check-in desks. Demarked by carpets and bollards	One/Two
Security	Area where the security processing occurs. Demarked by walls/doors	One/Two
Customs	Area directly after security, where customs processing occur	One
Departure gate	Seating area beside boarding gate. Demarked by seats and carpet	One/Two
Seating area	Area passengers can sit and are not associated with cafes or bars or departure gate	One
Cafes	Area where passengers can get good or drink, and the associated seating area.	One
Shops	Areas where passenger can purchase or browse for products on sale.	One
Currency exchange	Areas where passengers can purchase foreign currency	One
Oversized baggage	Area where passengers take their luggage that have been deemed oversized by an airline	One
Tax Refund Service (TRS)	Area where passengers can claim tax on products bought in Australia. Associated with Customs	One
Baggage wrapping	Area where passengers can get their luggage wrapped, situated before check-in	One
Bar	Area where passengers can buy alcohol for consumption in airport	One
Paid Internet Access	Area where passengers can use computers (owned by the airport) and purchase time to browse internet	One
Automatic Teller Machine (ATM)	Area where passengers get money from banks machines	One
Amenities	Area where passengers can wash or use the toilet	One
Airport lounge	Private areas where passengers can pay to go, away from main terminal area, associated with airlines	One
Domestic terminal	Area associated with domestic flights	One
Information desk	Area where passengers can get information about the airport terminal	One
Activities		
Interacting with staff	Passenger is talking to a member of staff employed by the airport	One/Two
Interacting with group	Passenger is talking to another person who has accompanied them to the airport	One/Two
Interacting with own	Passenger is interacting with an item of technology	One/Two

technology	that is owned by them, or someone in their group	
Interacting with airport technology	Passenger is interacting directly with an item of technology owned by the airport	One/Two
Interacting with non-group	Passenger is talking to a person at the airport that is not in their group, or employed by the airport	One/Two
Repacking	Passenger puts their items into bags or pockets.	One/Two
Unpacking	Passenger takes their items out of bags or pockets	One/Two
Reading/writing	Passenger is reading or writing	One/Two
Eating/drinking	Passenger is eating or drinking	One/Two
Browsing	Passenger walks through a shop or cafe looking or touching or handling products or signs	One/Two
Purchasing	Passenger pays for a product or service	One/Two
Lying/sleeping	Passenger is lying or sleeping	One/Two
Sitting	Passenger is sitting	One/Two
Waiting/standing	Passenger is sitting or standing doing nothing else	One/Two
Walking without luggage	Passenger is walking without any luggage	One/Two
Walking with luggage	Passenger is walking with luggage	One/Two
Walking with pram	Passenger is walking with a pram	One/Two
Walking with trolley	Passenger is walking with an airport owned trolley	One/Two
Being scanned	Passenger is in security and walks through X-ray	One/Two
Filling out OPC	Passenger is filling out the Outgoing Passenger Card (OPC). Required for Customs	One/Two
Random extra security check	Passenger is asked to undergo an extra security check while in the security domain	One/Two
Activating scanner	Passenger activates the x-ray machine during the security process	One/Two
Checking signage	Passenger obviously looks up and checks signage	One/Two
Checking flight information	Passenger looks at airport owned screens to find out information on flight	One/Two
Using water fountain	Passenger uses a water fountain	One/Two
Smoking	Passenger smokes	One/Two
Saying goodbye	Passenger says goodbye to members of their group, normally before entering security	One/Two
Grooming	Passenger grooms themselves, for example brushes hair, or applies lip gloss etc	One/Two
Queuing	Passenger queues for a service	One/Two
Running without luggage	Passenger runs without luggage	One/Two

Appendix F

Verbal data coding scheme

Code	Definition	Field Study
Marco Experience		
Processing	Periods associated with necessary tasks to get through the airport procedures as required by airport rules	One
Discretionary	Periods associated with non-processing times. Chosen by the passenger.	One
Location Level		
Check-in	Interviewee discusses check-in and associated processes	One/Two
Security	Interviewee discusses security and associated processes	One/Two
Customs	Interviewee discusses customs and associated processes	One/Two
Departure gate	Interviewee discusses departure gate and associated processes	One
Seating area	Interviewee discusses seating	One
Cafes	Interviewee discusses activities at a cafe	One
Shops	Interviewee discusses activities at a shop	One
Currency exchange	Interviewee discusses activities at a currency exchange	One
Tax Refund Service (TRS)	Interviewee discusses activities at a TRS	One/Two
Baggage wrapping	Interviewee discusses activities at a baggage wrapping area	One
Bar	Interviewee discusses activities at a bar	One
Paid Internet Access	Interviewee discusses activities at a paid internet area	One
Amenities	Interviewee discusses using the amenities	One
Airport lounge	Interviewee discusses activities at an airport lounge	One
Domestic terminal	Interviewee discusses activities at the domestic terminal	One
Customer service		
Positive customer service	Interviewee talks positively about an interaction with an airport staff member	One
Negative customer service	Interviewee talks negatively about an interaction with an airport staff member	One
Experience comment		
Positive comment	Interviewee talks positively about an occurrence at the airport (not related to customer service)	One/Two
Neutral comment	Interviewee talks in neutral terms about an occurrence at the airport (not related to customer service)	One/Two

Negative comment	Interviewee talks negatively about an occurrence at the airport (not related to customer service)	One/Two
Reason for activities		
Previous knowledge	Interviewee talks about using previous knowledge when explaining an activity	One/Two
Tactic	Interviewee talks about using a tactic when explaining an activity	One/Two
Reason	Interviewee explains the reason behind an activity	One/Two
Improvement to airport	Interviewee talks about an improvement they would like to see at the airport	One
Unexpected occurrence	Interviewee talks about an unexpected occurrence when explaining an activity	One
Forgot occurrence	Interviewee explains that they cannot remember an occurrence	One
Communication		
Good	Interviewee discusses good communication at processing	Two
Poor	Interviewee discusses poor communication at processing	Two
Problems		
Terminology	Interviewee discusses problems with terminology during processing	Two
Passenger knowledge	Interviewee discusses problems with passenger knowledge during processing	Two
Time constraints	Interviewee discusses problems with time constraints in processing	Two
World differences	Interviewee discusses problems with international differences in processing	Two

Appendix G

Check-in interview questions

What do you think the main problems passengers face at airport?

What do you think the main problems passengers face at check-in?

What could be done to help you improve passenger experience?

When we looked at passengers who had over 50% of time at the airport allocated to processing this was mainly due to queuing at Check-in.

What do you think could be done to reduce queuing at check-in?

Do you have any other comments about the passenger experience?

What improvements do you think would help you in your daily job?

Security interview questions

What do you think the main problems passengers face at airport?

What do you think the main problems passengers face at security?

What could be done to help you improve passenger experience?

Do you have any other comments about the passenger experience?

What improvements do you think would help you in your daily job?

Customs interview questions

What do you think the main problems passengers face at airport?

What do you think the main problems passengers face at customs?

What could be done to help you improve passenger experience?

Do you have any other comments about the passenger experience?

What improvements do you think would help you in your daily job?

Boarding interview questions

What do you think the main problems passengers face at boarding?

What could be done to help you improve passenger experience?

Only problem encountered with boarding was passengers finding gate. Is this a problem you encounter often?

How do you think this could be changed to help passengers?

Do you have any other comments about the passenger experience?

What improvements do you think would help you in your daily job?